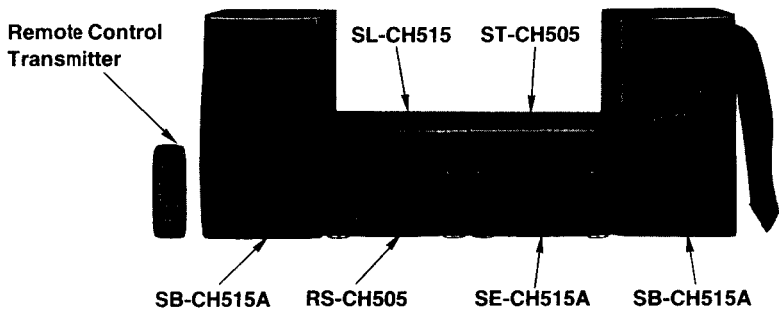
ORDER NO. AD9312323C2

Service Manual

Amplifier

Amplifier

SE-CH515A



Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

Colour

(K) . . . .Black Type

Areas

Suffix for Model No.	Area	Colour
(E)	Europe	(K)
(EB)	Great Britain	
(EG)	Germany and Italy	

System: SC-CH515

Specifications

Power output
DIN 1 kHz, THD 1%, both channel driven 2×50 W (6Ω)
Total harmonic distortion
Rated power at 1 kHz 1% (6Ω)
Half power at 1 kHz 0.09% (6Ω)
Load impedance
MAIN 6~8Ω
SURROUND 8Ω
S/N (rated power) 84 dB
Input MIC; 600Ω, Ø6.2
Output HEADPHONE; 32Ω, Ø3.5

■ **General**
Power consumption 170 W
Power supply
For (E) (EG) areas 230 V, AC 50/60 Hz
For (EB) area 230 V~240 V, AC 50/60 Hz
Dimensions (W×H×D) 270×118.5×336 mm
Weight 4.4 kg

Notes:
1. Weights and dimensions shown are approximate.
2. Design and specifications are subject to change without notice.
3. Total harmonic distortion is measured by the digital spectrum analyzer.

System	Tuner	Compact disc player	Amplifier	Cassette deck	Speakers
SC-CH515	ST-CH505	SL-CH515	SE-CH515A	RS-CH505	*SB-CH515A

*Made in PAES

Technics

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■ Before Repair

(1) Turn off the power supply. Using a 10Ω, 10 W resistor, connect both ends of power supply capacitors (C701, C702) in order to discharge the voltage.
(2) Before turning the power supply on, after completion of repair, slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed current at 50/60 Hz in NO SIGNAL mode should be shown below with respect to supply voltage 230 V~240 V.

Power supply voltage	AC 230 V	AC 240 V
Consumed current 50 Hz	80~180 mA	80~180 mA

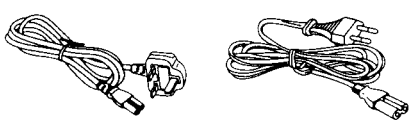
■ Protection Circuitry

The protection circuitry may have operated if either of the following conditions is noticed:
*No sound is heard when the power is switched ON.
*Sound stops during a performance.
The functions of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are "shorted", or if speaker systems with an impedance less than the indicated rated impedance of this unit are used.
If this occurs, follow the procedure outilined below:
1. Switch OFF the power.
2. Determine the cause of the problem and correct it.
3. Switch ON the power once again.

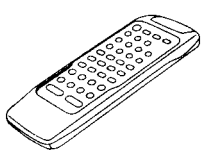
Note:
When the protection circuitry functions, the unit will not operate unless the power is first switched OFF and then ON again.

■ Accessories

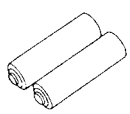
AC power supply cord ..... 1 pc.
(VJA0733) ...for (EB) area
(RJA0019-2K) ...for (E) (EG) areas



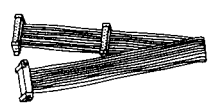
Remote control transmitter ..... 1 pc.
(RAK-CH121WH)



Remote control batteries ..... 2 pcs.
(UM-4, AAA, R03)
Note: These are available on sale route.

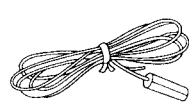


Flat cable (Long) ..... 1 pc.
(REX0511)

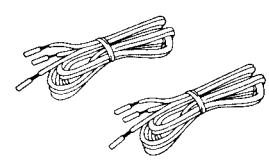


Flat cable (Short) ..... 1 pc.
(REX0512)

FM indoor antenna ..... 1 pc.
(RSA0007)



Speaker cords ..... 2 pcs.
(REE0499)



AM loop antenna (RSA0010) ..... 1 pc.
Antenna holder (RMN0244) ..... 1 pc.
Screw (XTN3+10AFZ) ..... 1 pc.

Attachment plug ..... 1 pc.
(SJP9009)...for (EB) area

■ Caution for AC Mains Lead

("EB" area code model only)

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark ⓐ or the BSI mark ⓚ on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local dealer.

CAUTION!
IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.
If in any doubt please consult a qualified electrician.

IMPORTANT

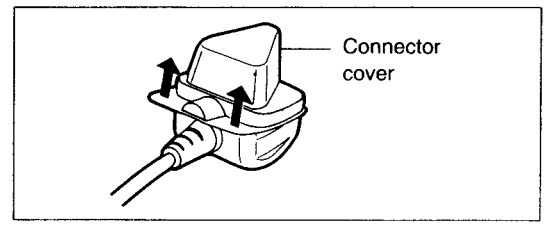
The wires in this mains lead are coloured in accordance with the following code:
Blue: Neutral, Brown: Live.
As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Black or Blue.
The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL ⏚ OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOF—KEEP DRY.

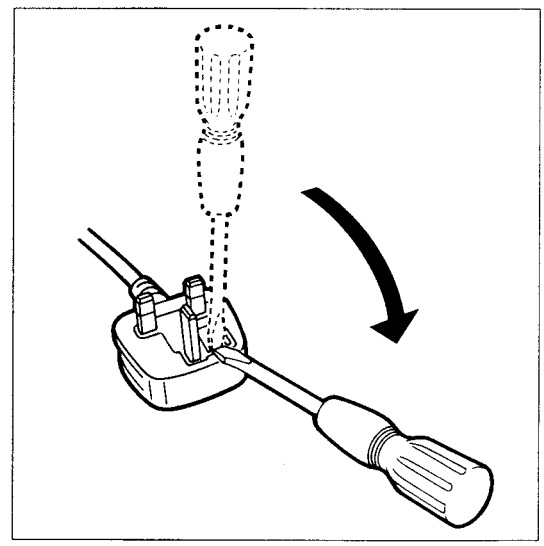
Before use

Remove the connector cover as follows.

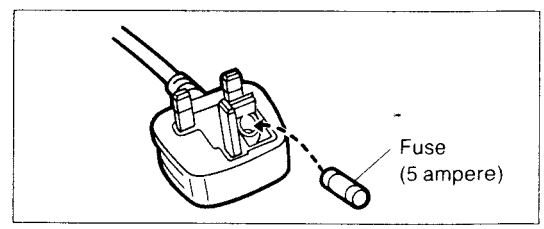


How to replace the fuse

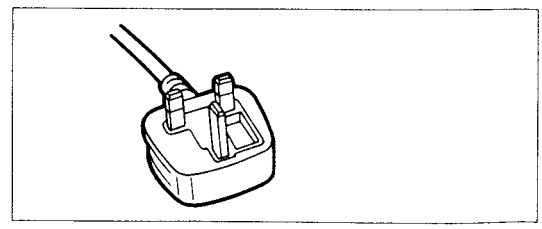
1. Open the fuse cover with a screwdriver.



2. Replace the fuse.



3. Close the fuse cover.



■ Stacking the Components

Install the various components as shown below.

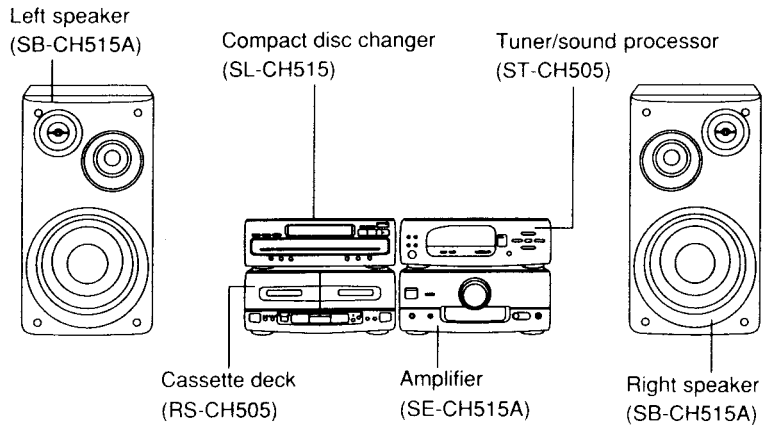
Horizontal stacking A

Vertical stacking B

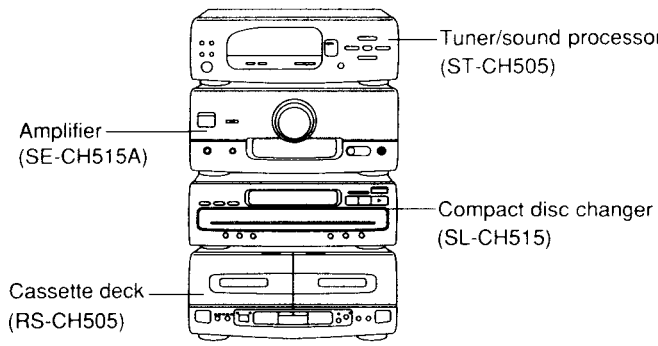
System layout example C

To produce a better stereo sound, install both speakers away from the system.
Surround sound effect differs according to where you install the surround speakers. Install them as you like.

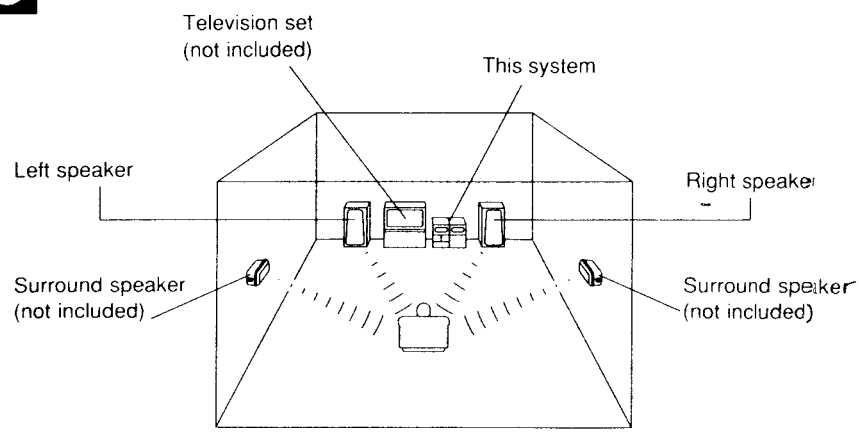
A



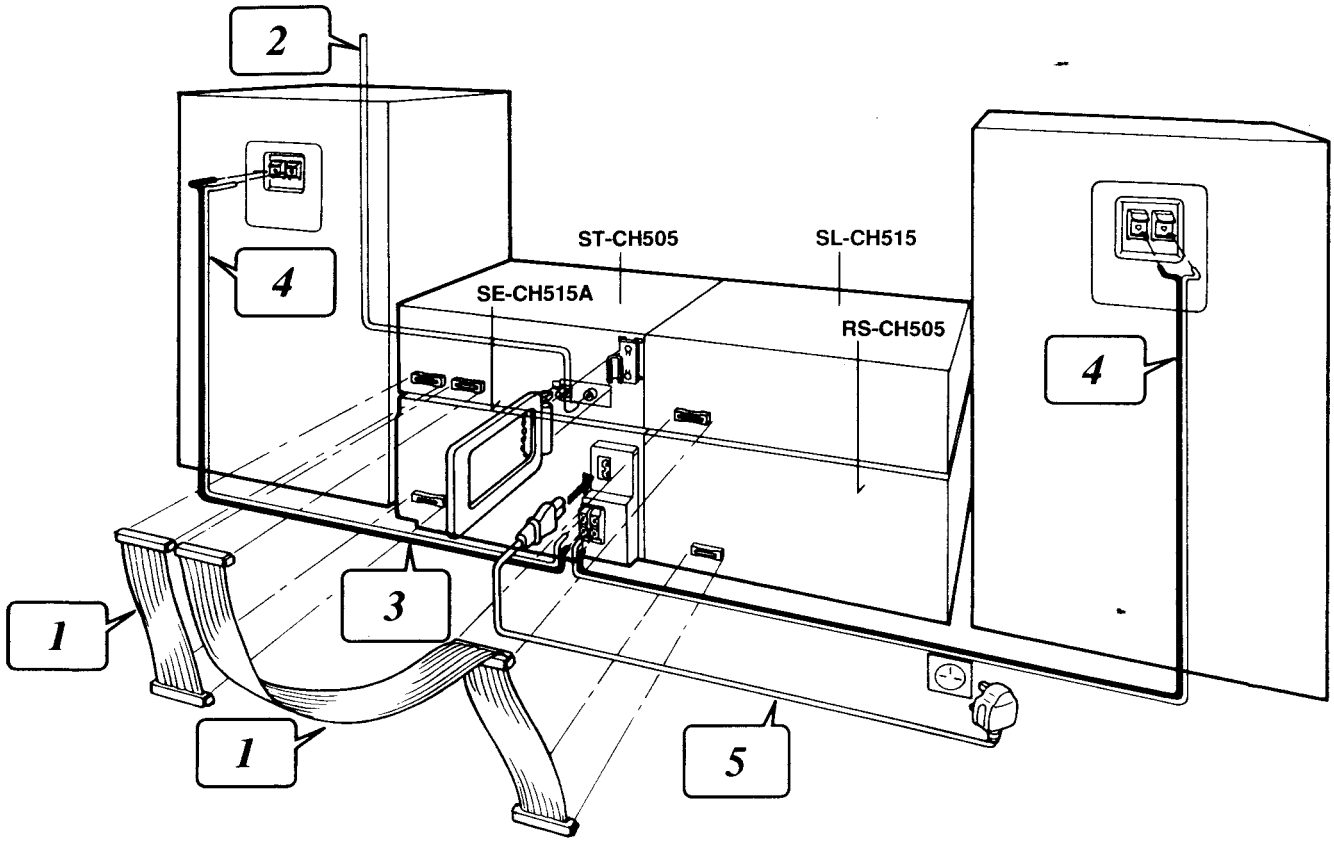
B



C

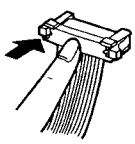


■ Connections

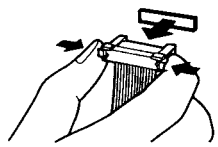


1 Connect the flat cable.

Connecting



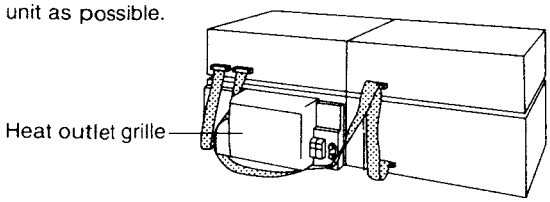
Disconnecting



1. Connect the shorter flat cable to the terminal of the tuner/sound processor and amplifier.
2. Connect the longer flat cable to the terminal of the tuner/sound processor, compact disc player, and cassette deck.

   Route the cable horizontally (underneath the heat outlet grille) so that the side with the white-coloured lead is positioned at the front.
   Be sure to connect the blue-coloured connector to B1 (tuner/sound processor).

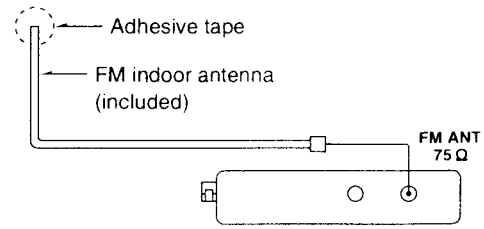
After connection, fold and press the cable as flat to the back of the unit as possible.



Do not try connecting or disconnecting the flat cable while the power is switched to ON.

2 Connect the FM indoor antenna.

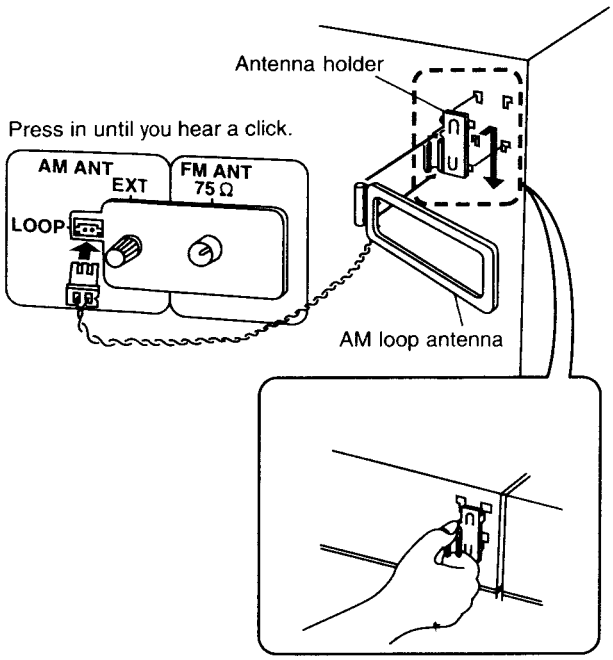
Install the antenna on a wall at a height and in a direction which result in the best reception.



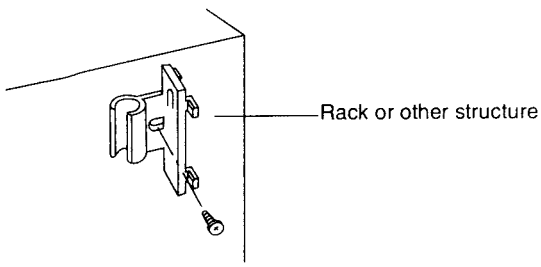
The tip of the internal antenna wire should not come into contact with any metal objects.
When you cannot get a good reception with this FM indoor antenna, we recommend you install an FM outdoor antenna.
(Not included. See page **8**.)

3 Connect the AM (MW/LW) loop antenna.

1. Attach the antenna holder to the rear panel of the tuner/sound processor.
2. Clamp the AM loop antenna antenna to the antenna holder and connect the antenna terminal to the rear panel of the tuner/sound processor.
3. Position the loop for the best reception.



You may attach the AM antenna holder with screw (included) to a rack or other structure. In this case, attach as showed in the figure below.



Note

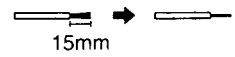
To minimize noise pickup, keep the AM loop antenna cord along the heat outlet grille, and away from the flat cables.

4 Connect the right (R) and left (L) speaker cables.

Notes

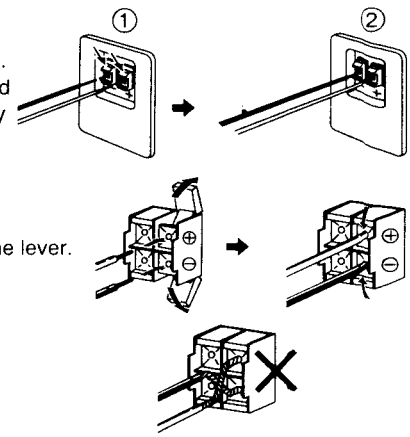
- Be sure to connect speaker cables before connecting the AC power supply cord.
- The load impedance of any speaker used with this unit must be 6–8Ω.
- Match the two wires from the left and right speaker cables with the same coloured levers of the speaker terminals, then insert the wires into the respective terminals.

1. Strip off the outer covering, and twist the center conductor.



Make sure the bare ends of the wires are not unraveled. (If they are, twist them tight again.)

2. ① Tilt the lever back and insert the wire.
   ② Close the lever and pull the cord gently to be sure that it is secured.
3. Insert the wire to the rear panel of the amplifier, and close the lever.



Notes

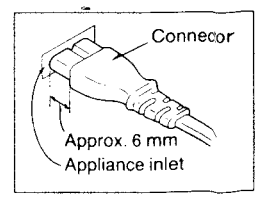
- To prevent damage to circuitry, never short-circuit positive (+) and negative (–) speaker wires.
- Be sure to connect only positive (red) wires to positive (+) terminals and negative (black) wires to negative (–) terminals.

BE SURE TO READ THE CAUTION FOR AC MAINS LEAD ON PAGE 3 BEFORE PROCEEDING TO STEP 5.

5 Connect the AC power supply cord after you have connected all other cables.

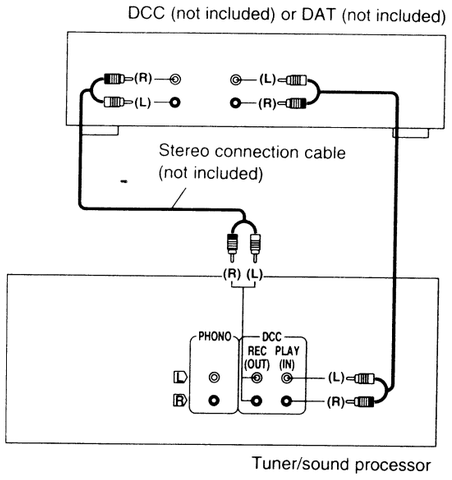
Insertion of Connector

Even when the connector is perfectly inserted, depending on the type of inlet used, the front part of the connector may jut out as shown in the drawing.
However there is no problem using the unit.

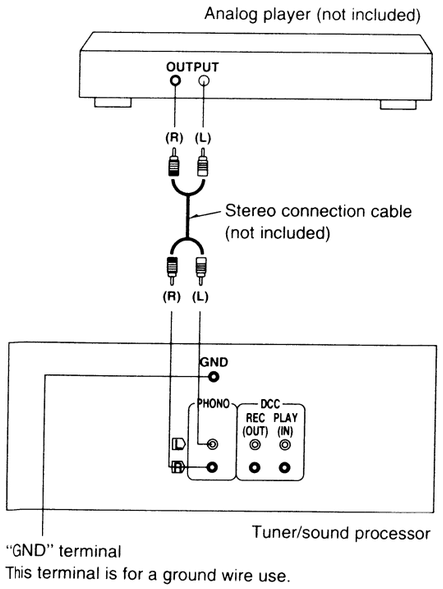


External unit connection

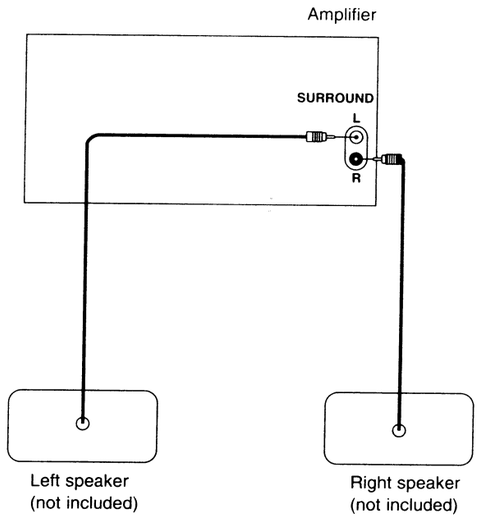
DCC (digital compact cassette deck) or DAT (digital audio tape deck)



Analog player



Rear surround speakers



Note

Be sure to connect both speaker systems. If only one side is connected, no sound will be heard.

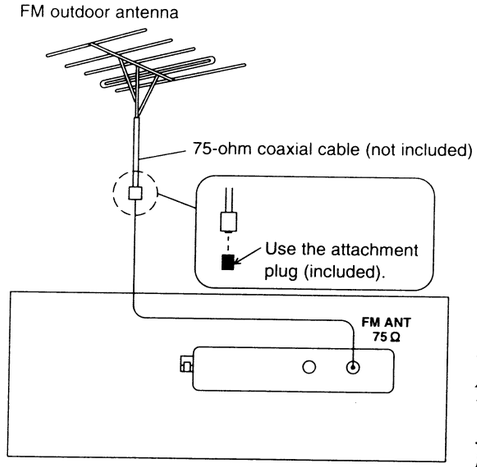
Install each speaker left and right at the back of the listening space.

Optional antenna connections

FM outdoor antenna (not included)

If the FM indoor antenna does not provide satisfactory reception of FM broadcasts, use an outdoor antenna.

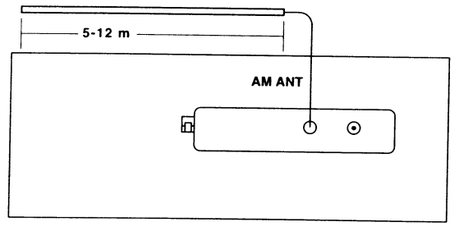
You may need an outdoor antenna if you use this system in a mountainous region or inside a reinforced-concrete building, etc.
An outdoor antenna should be installed by a competent technician only.



AM (MW/LW) outdoor antenna (not included)

An outdoor antenna may be required in a mountainous region, or if this system is located inside a reinforced-concrete building, etc.

Run 5 to 12 m of vinyl-covered wire horizontally along a window or other convenient location.

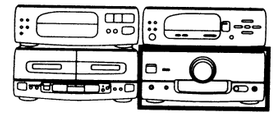


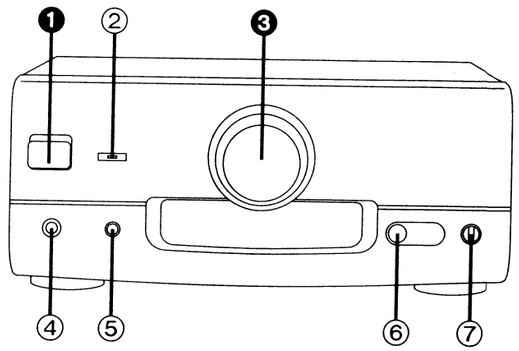
Note

Do not remove the AM loop antenna.

■ Location of Controls

The functions indicated by the numbers with black background (for example ❶) can also be activated from the remote control transmitter.





Amplifier section

No.	Name
❶	**Power "STANDBY ⏻/ON" switch (POWER, STANDBY ⏻/ON)** Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
②	**Standby indicator (STANDBY)** When the unit is connected to the AC mains supply, this indicator lights up in standby mode and goes out when the unit is turned on.
❸	**Volume control (VOLUME)**
④	**Headphones jack (PHONES) (∅3.5, 32Ω)**
⑤	**Range (Output level) select button (RANGE)**
⑥	**Microphone jack (MIC) (∅6.2, 600Ω)**
⑦	**Microphone volume control (MIC VOLUME)**

■ Troubleshooting Guide

Before requesting service for this unit, check the chart below for a possible cause of the problem you are experiencing. Some simple checks or a minor adjustment on your part may eliminate the problem and restore proper operation.
If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the directory of Authorized Service Centers (enclosed with this unit) to locate a convenient service center, or consult your dealer for instructions.

Problem	Probable cause(s)	Suggested remedy
Problems common to all systems		
There is no sound when the power is ON.	Volume is set too low.	Adjust the volume level with the volume control on the amplifier.
The location of the various musical instruments is not well defined.	The (+) and (−) connections to one of the speakers are reversed.	Connect the speaker cord correctly.
The left and right sounds are reversed.	The left and right connections to the speaker are reversed.	Connect the speaker cords correctly.
When listening to the external unit, the left and right sounds are reversed.	The left and right connections to the external unit are reversed.	Connect the external unit's cord correctly.
Only one speaker is emitting sound.	One of the wires of the speaker cord is disconnected.	Connect the speaker cord correctly.
	The balance control is set to left or right.	Set the balance to the center position.
There is no sound when a source is being played.	The (+) and (−) wire of the speaker cords are shorted.	Switch the system to the standby mode, and reconnect the speaker cords so that they are not shorted. Then switch on the power.
"U70" display appears on the compact disc changer or tuner/sound processor display.	Flat cables are not connected steadily.	Connect the flat cables steadily.
While listening to FM broadcasts		
There is a "rushing noise" during a stereo broadcast which is not audible during a monaural broadcast.	The transmitting station is a long distance away.	●If you are using an indoor antenna, change to an outdoor antenna. ●If you are using a high-grade outdoor antenna, try changing the installation location, height, and orientation.
You hear excessive noise during a stereo broadcast, and occasionally the sound disappears.	The installation location and orientation of the antenna are unsuitable.	
The stereo indicator ▪ flickers and does not light completely.	The transmitting station is a long distance away.	
	The power of the TV set or VCR is ON.	Try switching off the TV set or VCR.
The sound during a stereo broadcast is highly distorted.	There is a building or mountain nearby. [Distortion is caused by interference between the signal from the transmitting station (direct wave) and the signal reflected from the building or mountain (reflected wave).]	Use a high-grade outdoor antenna, and install it in a good location, height, and orientation for reception.

Problem	Probable cause(s)	Suggested remedy
While listening to LW/MW broadcasts		
You hear an unusual beat sound.	You are using the system at the same time you are playing a TV set.	Switch off the TV set, or use the system further away from it.
You hear a low-frequency hum.	The antenna wire is near the power cord.	Separate the antenna wire from the power cord.
When there is a television set nearby		
The picture on the TV disappears or stripes appear on the screen.	The location and orientation of the antenna are incorrect.	If you are using an indoor antenna, change to an outdoor antenna.
	The wiring at the back of the system is unsuitable.	Separate the antenna wire of the TV set from the system.
While listening to tapes		
Sound is low, intermittent, or poor quality, noisy, scratchy, or unsteady.	Heads are dirty.	Clean the heads.
	Dolby noise reductions is set in the wrong position.	Set it to match the Dolby NR recording mode.
The deck does not enter the recording mode.	The erase-prevention tabs are removed from the casette.	Attach tape to cover the space left by removal of the erase-prevention tabs.
While listening to compact discs		
The display will not show the correct indication. Disc play does not start when you press the play button.	The disc is not positioned correctly in the disc tray.	Load the disc on the tray correctly.
	The disc is loaded upside down.	Reload the disc.
	The disc is dirty.	Wipe the disc with a soft cloth.
	The disc is scratched.	Replace the disc with a new one.
	The disc is badly warped.	
	The disc is a nonstandard one.	Replace the disc with a different one.
	There is condensation inside the disc player.	Switch the power ON, and then wait or 60 minutes before using the disc player.
While using the remote control		
The system cannot be operated with the remote control.	The batteries are installed in the reverse polarity.	Re-insert the batteries in the correct polarity.
	The batteries are worn.	Replace the batteries with new batteries.

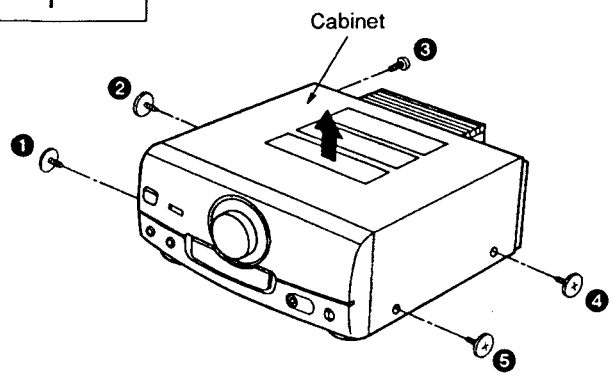
The servicer will require all components to service your system.
Therefore, should service ever be necessary, be sure to bring the entire system.

■ Disassembly Instructions

"ATTENTION SERVICER"
Some chassis components may have sharp edges. Be careful when disassembling and servicing.

Ref. No. 1	Removal of the Cabinet

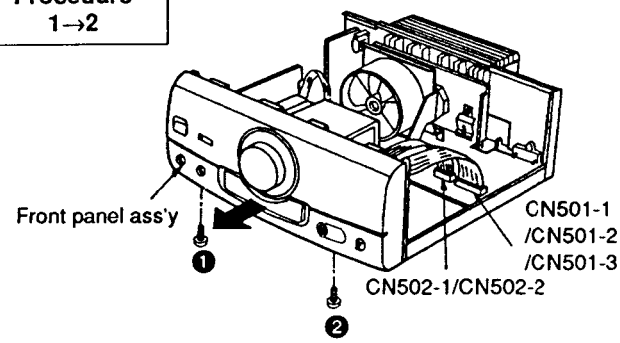
Procedure 1



1. Remove 5 screws (❶~❺).
2. Remove the cabinet in the direction of the arrow.

Ref. No. 2	Removal of the Front Panel Ass'y

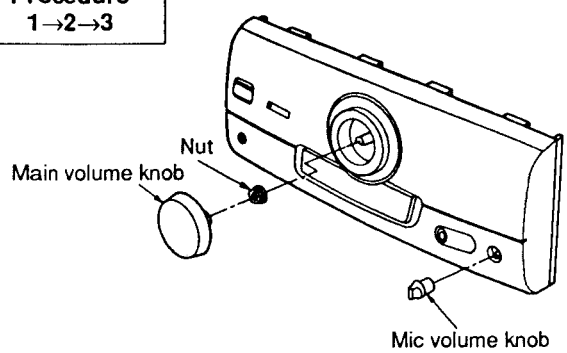
Procedure 1→2



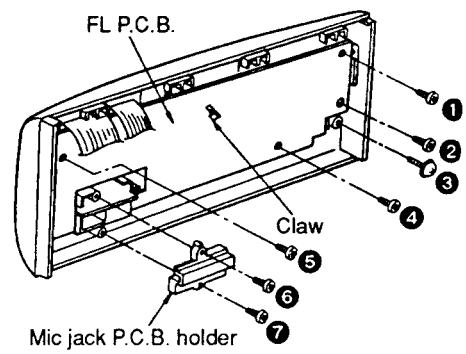
1. Remove 5 connectors (CN501-1, CN501-2, CN501-3, CN502-1, CN502-2).
2. Remove 2 screws (❶, ❷).
3. Remove the front panel ass'y in the direction of the arrow.

Ref. No. 3	Removal of the FL P.C.B.

Procedure 1→2→3



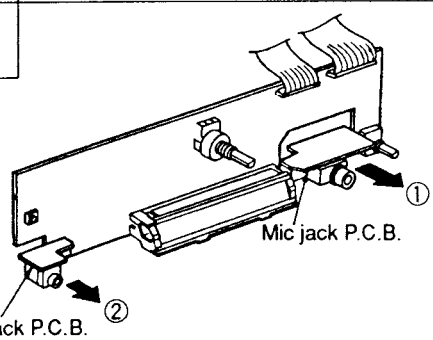
1. Pull out the main volume knob.
2. Pull out the mic volume knob.
3. Remove the nut.



4. Remove 7 screws (❶~❼).
5. Remove the mic jack P.C.B. holder.
6. Release the claw.

Ref. No. 4	Removal of the Mic Jack P.C.B. and Headphones Jack P.C.B.

Procedure 1→2→3→4

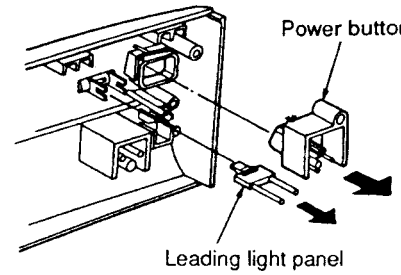


■ Removal of the MIC Jack P.C.B.
- Remove the mic jack P.C.B. in the direction of arrow ①.

■ Removal of the Headphones Jack P.C.B.
- Remove the headphones jack P.C.B. in the direction of arrow ②.

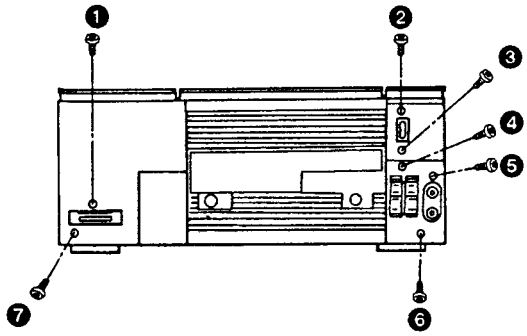
Ref. No. 5	Removal of the Power Button and Leading Light Panel

Procedure 1→2→3→5

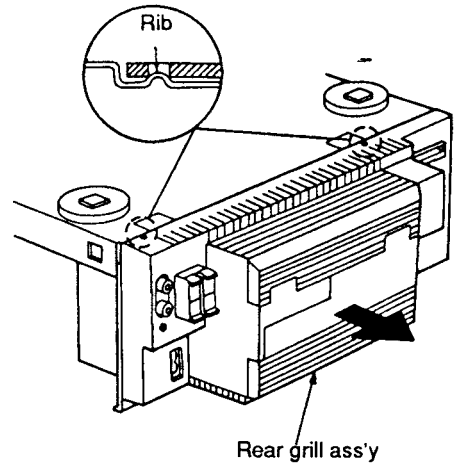


- Remove the power button and leading light panel in the direction of the arrow.

Ref. No. 6	Removal of the Rear Grill Ass'y
Procedure 1→6	

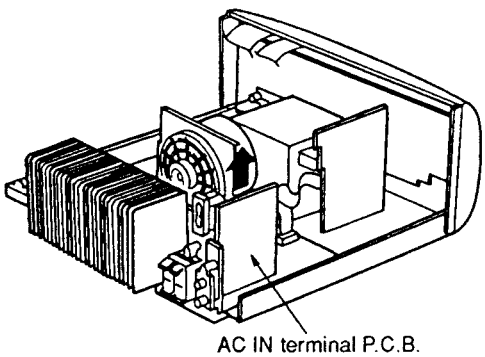


1. Remove 7 screws (❶~❼).



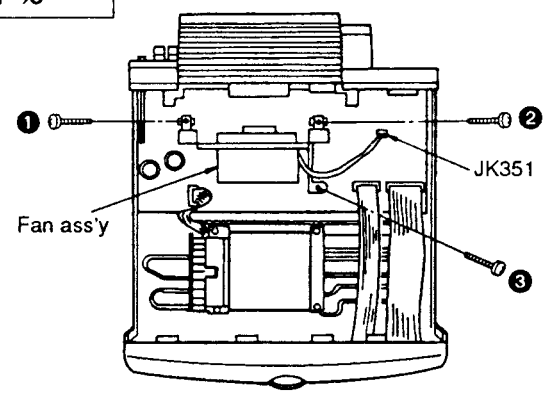
2. Remove 2 ribs.
3. Remove the rear grill ass'y in the direction of the arrow.

Ref. No. 7	Removal of the AC IN Terminal P.C.B.
Procedure 1→6→7	



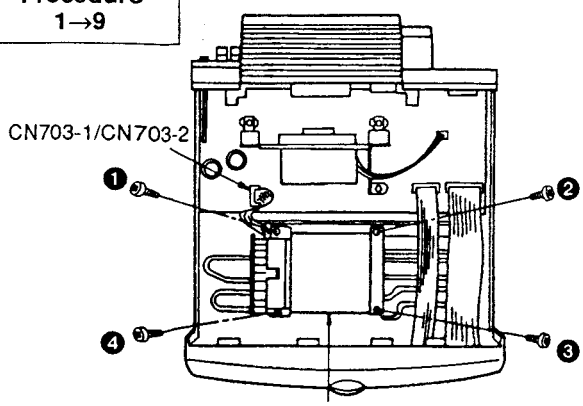
- Remove the AC IN terminal P.C.B. in the direction of the arrow.

Ref. No. 8	Removal of the Fan Ass'y
Procedure 1→8	



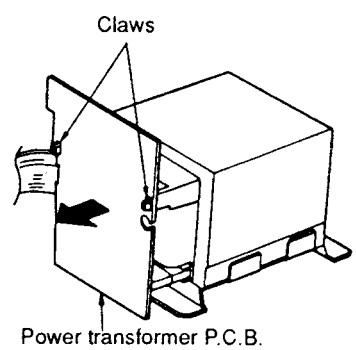
1. Remove the connector (JK351).
2. Remove 3 screws (❶~❸).

Ref. No. 9	Removal of the Power Transformer
Procedure 1→9	



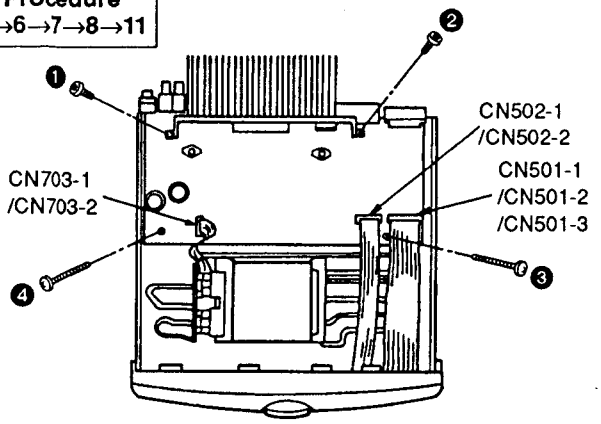
1. Remove 2 connectors (CN703-1, CN703-2).
2. Remove 4 screws (❶~❹).

Ref. No. 10	Removal of the Power Transformer P.C.B.
Procedure 1→9→10	



- Release 2 claws and then remove the power transformer P.C.B. in the direction of the arrow.

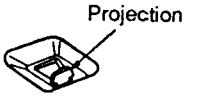
Ref. No. 11	Removal of the Main P.C.B.
Procedure 1→6→7→8→11	

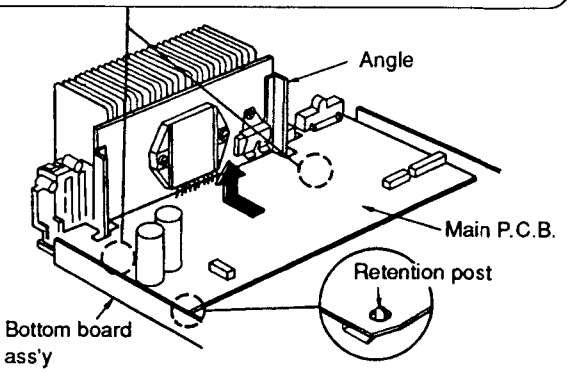


1. Remove 4 screws (❶~❹).
2. Remove 7 connectors (CN501-1, CN501-2, CN501-3, CN502-1, CN502-2, CN703-1, CN703-2).

■ NOTE
- Insert the projection on the angle into the hole of the bottom board ass'y and then install the Main P.C.B.

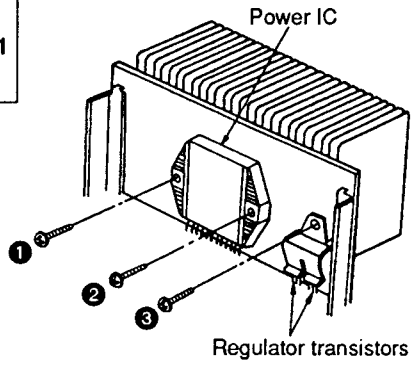
[Bottom view]





3. Lift the main P.C.B. off the retention post on the bottom board ass'y.
4. Remove the main P.C.B. in the direction of the arrow.

Ref. No. 12	Removal of the Power IC and Regulator Transistor
Procedure 1→6→7→8→11 →12	

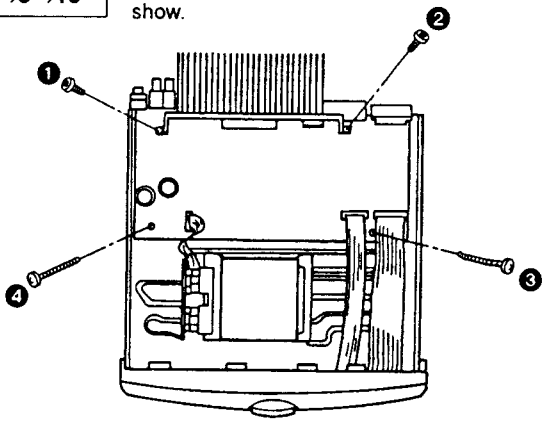


1. Unsolder the power IC or regulator transistors.
2. Remove 3 screws (❶~❸).

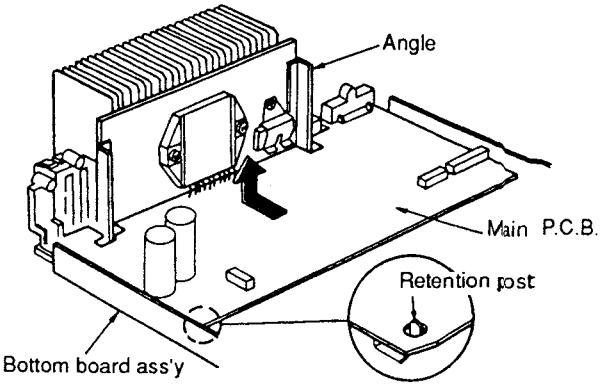
- When mounting the power IC or regulator transistor, apply silicone compound (RFKX0002) to the rear side of power IC or regulator transistors.

Ref. No. 13	How to check the Main P.C.B.
Procedure 1→6→8→13	

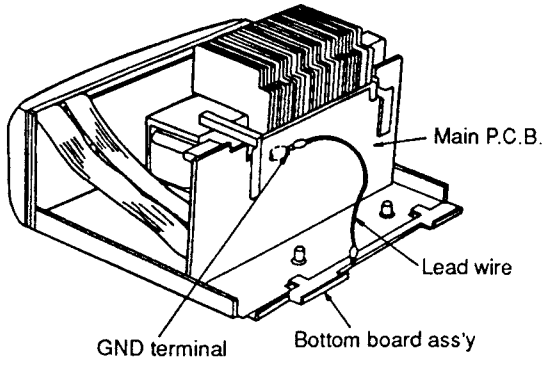
- When checking the soldered surfaces of main P.C.B. and replacing the parts, do as show.



1. Remove 4 screws (❶~❹).



2. Lift the main P.C.B. off the retention post on the bottom board ass'y.
3. Remove the main P.C.B. in the direction of the arrow.



4. Connect the GND terminal to the bottom board ass'y by the lead wire.

Ref. No. 14	Removal of the Fan Ass'y
Procedure 1→8→14	

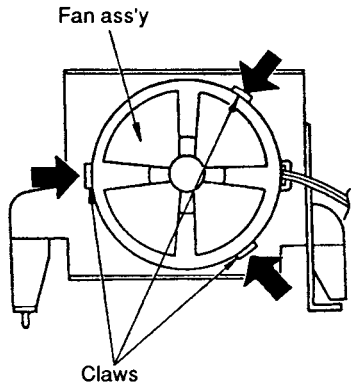


Fig. 1

1. Release 3 claws (shown in Fig. 1).

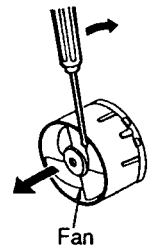


Fig. 2

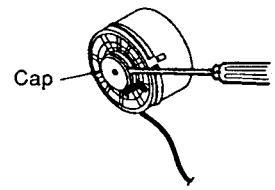


Fig. 3

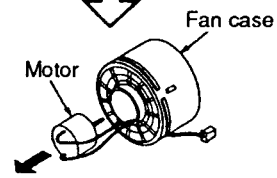


Fig. 4

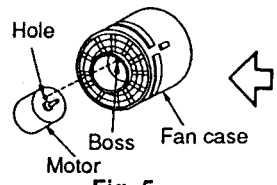
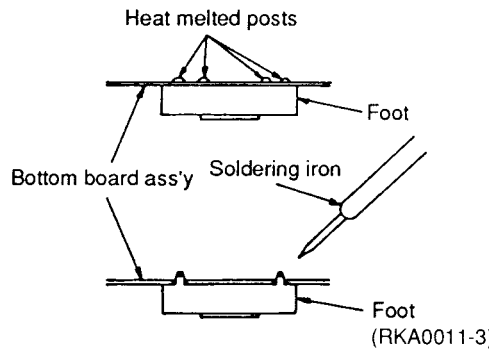


Fig. 5

2. Insert a screwdriver at the root of the fan (shown in Fig. 2).
3. Remove the cap (shown in Fig. 3).
4. Remove the motor from the fan case (shown in Fig. 4).
5. When mounting the motor, align the boss of the fan case with the hole of the motor (shown in Fig. 5).

• Replacement of the Foot

1. Remove the 4 heat melted posts on the bottom board ass'y with a pair of nippers or similar tool.
2. To replace the foot (RKA0011-3) on the bottom board ass'y melt the 4 posts with a soldering iron.



■ Power Source ON/OFF of This Unit SE-CH515A

1. Connect the AC power cord of this unit to an AC outlet and turn it on. (This unit comes to stand-by mode.)
2. Make test point TP701 (TP701) short as shown in Fig. 1. POWER indicator lights and this unit comes to power ON mode.

• Operation Check

1. Set this unit to power ON mode.
2. Input a signal (1kHz, 100mV) to the section between the resistor R217 (LINE IN for Lch) and the jumper J93 (LINE IN GND) as well as the section between the resistor R218 (LINE IN for Rch) and the jumper.
3. Connect the speaker to the speaker terminals and check if it sounds from the speaker.

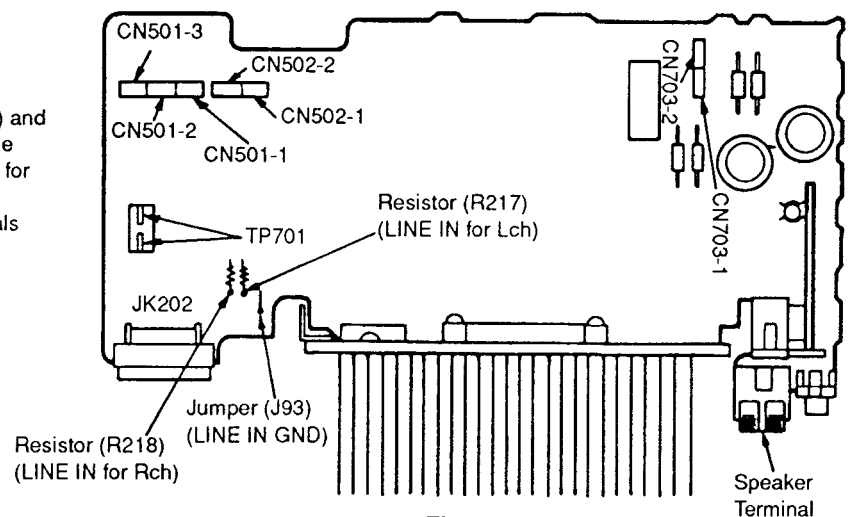
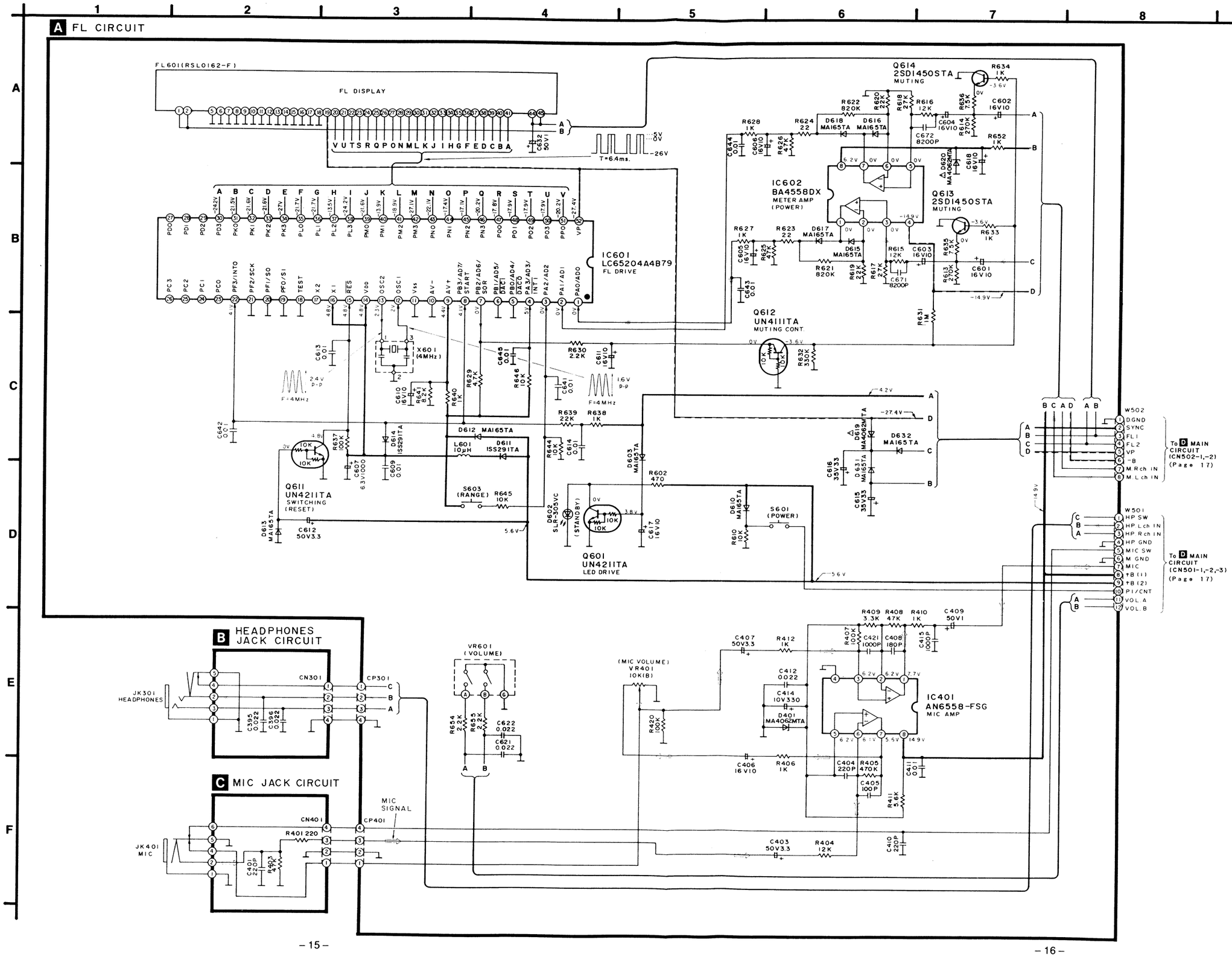
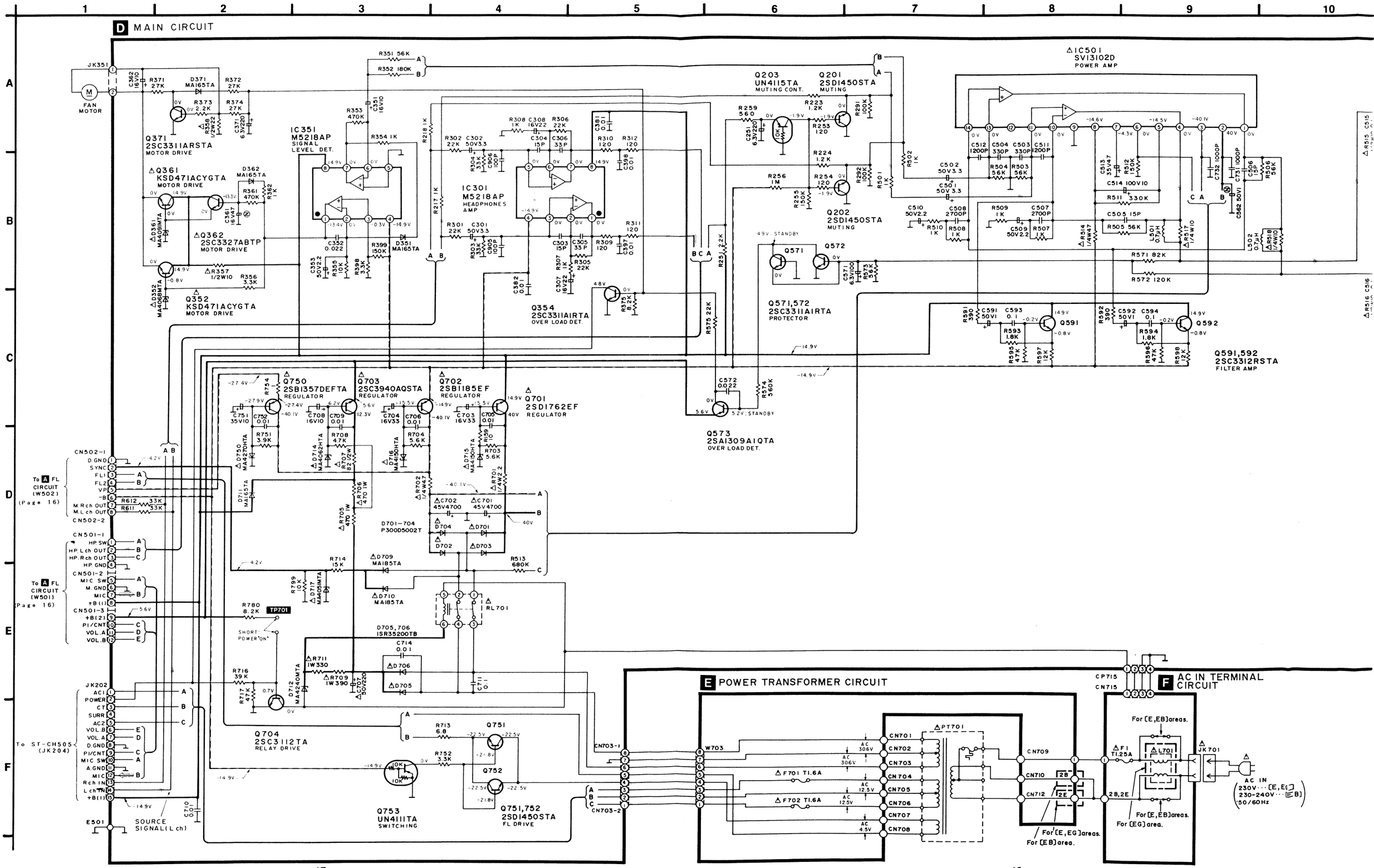


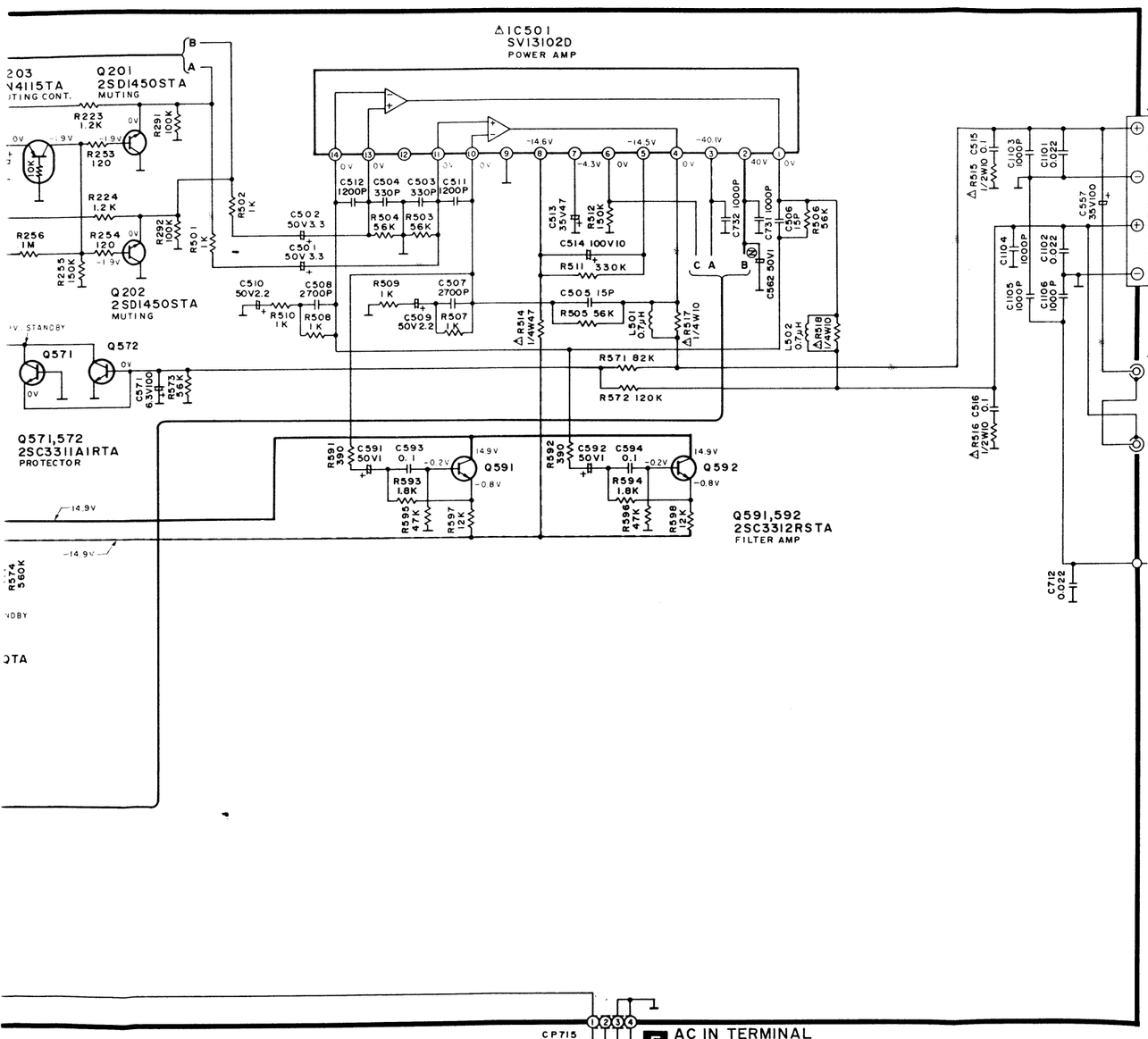
Fig. 1

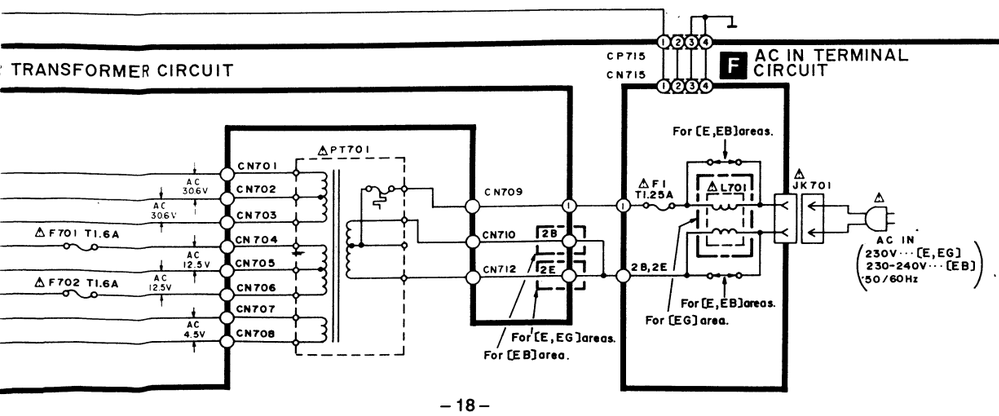
■ Schematic Diagram •FL/Headphones Jack/Mic Jack circuit (Parts list on pages 25~27)



■ Schematic Diagram •Main/Power Transformer/AC Input Terminal circuit (Parts list on pages 25~27)







Notes:

- ●S601 : Power "STANDBY ⏻/ON" switch (POWER, ▙ STANDBY ⏻ ▟ ON)
- ●S603 : Range select switch (RANGE)
- ●VR401 : Microphone volume control (MIC VOLUME)
- ●VR601 : Volume control (VOLUME)
- ●Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester. No mark: Power ON
- ●Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

- ●**This schematic diagram may be modified at any time with the development of new technology.**

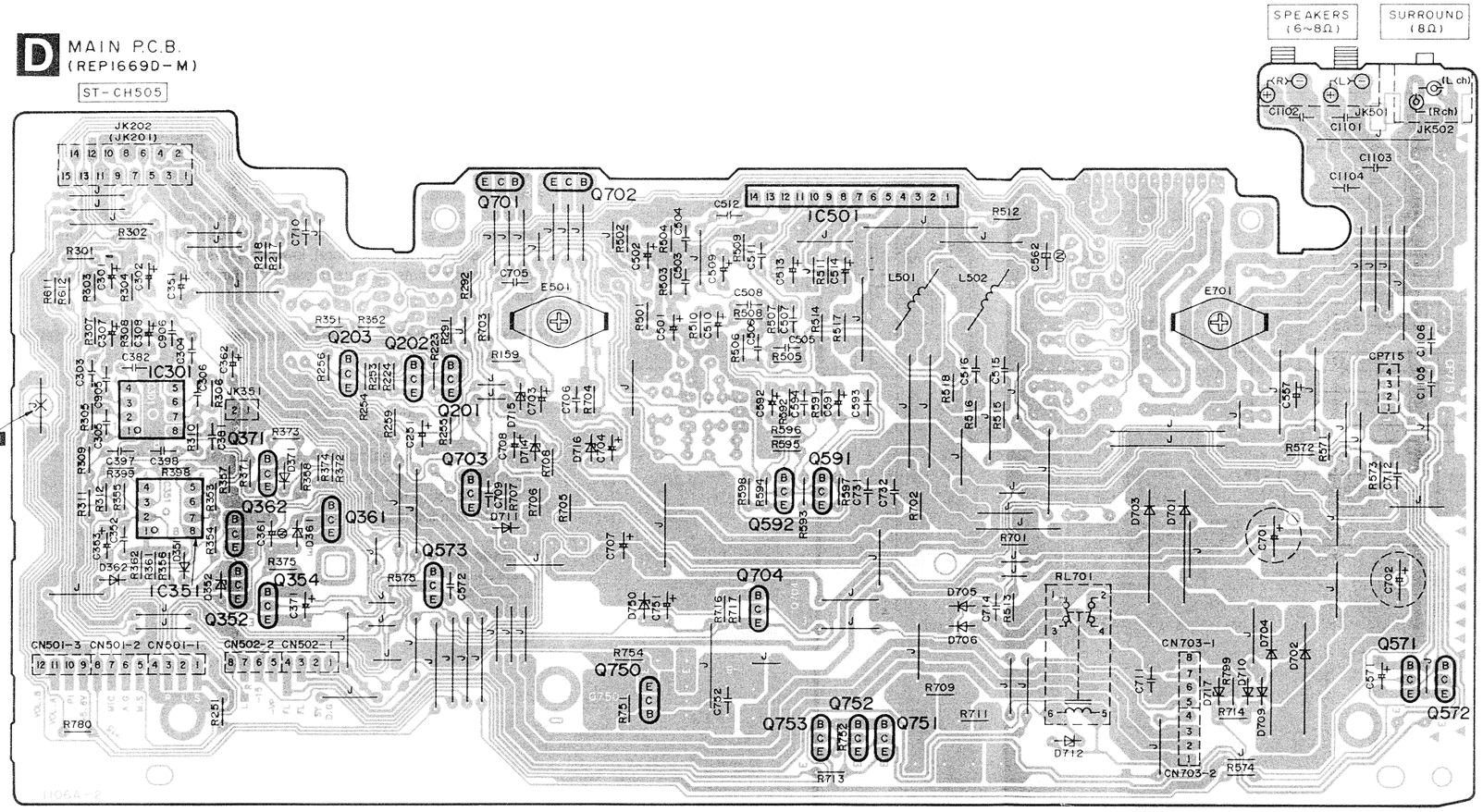
- ●**Caution!**
  IC and LSI are sensitive to static electricity.
  Secondary trouble can be prevented by taking care during repair.
  Cover the parts boxes made of plastics with aluminum foil.
  Ground the soldering iron.
  Put a conductive mat on the work table.
  Do not touch the legs of IC or LSI with the fingers directly.

- ●**Voltage and signal line**
  ▬▬▬ : Positive voltage line
  ▬ ▬ ▬ : Negative voltage line
  ▒▒▒ : Source signal line
  ⇨ : Mic signal (Lch)

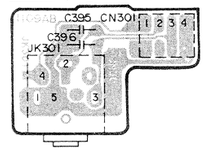
■ Printed Circuit Board Diagram

•This circuit board diagram may be modified at any time with the development of new technology.

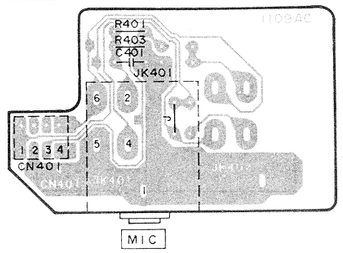
D MAIN P.C.B. (REPI669D-M)



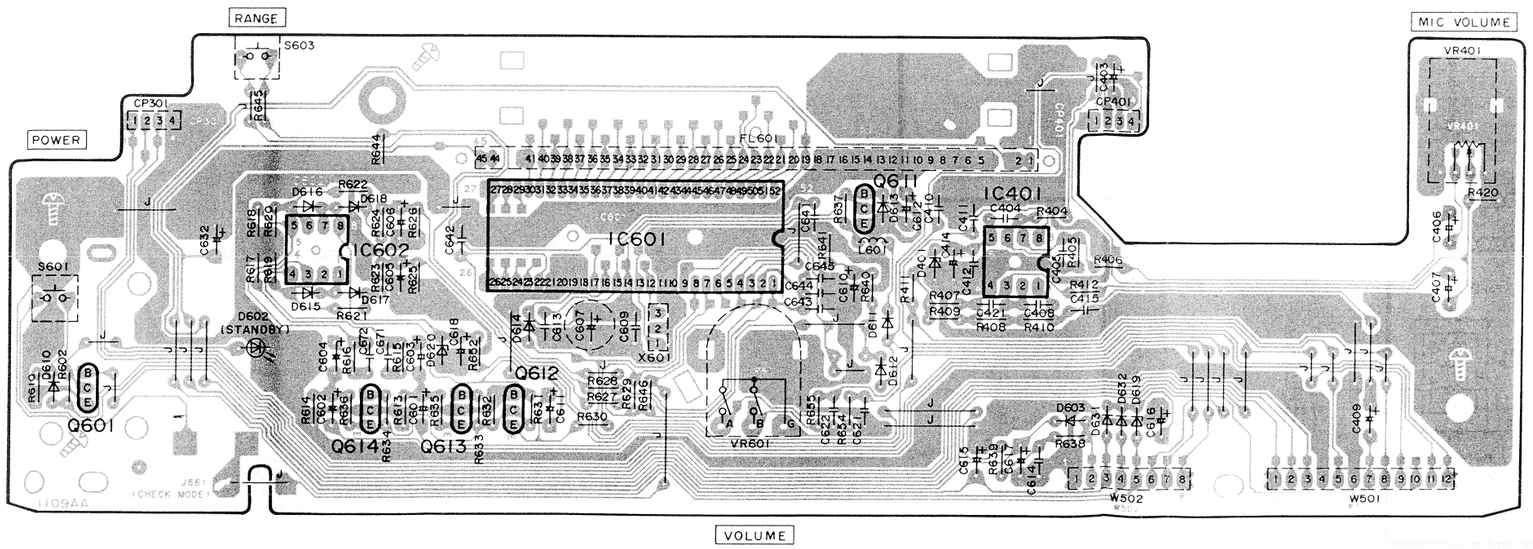
B HEADPHONES JACK P.C.B. (REPI671C-S)



C MIC JACK P.C.B. (REPI671C-S)



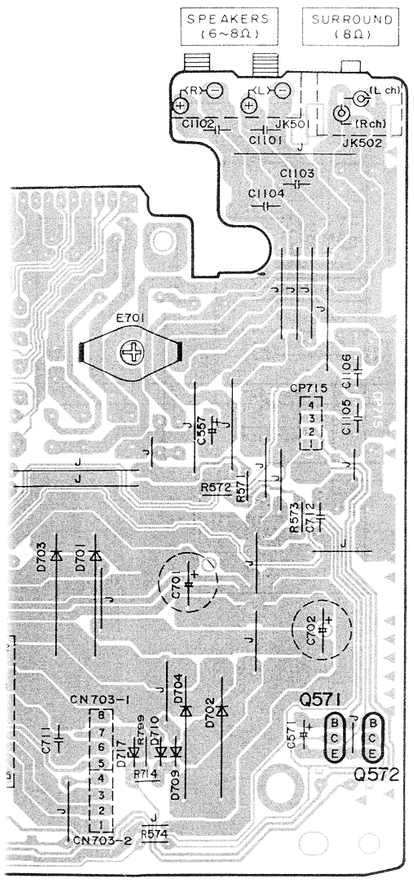
A FL P.C.B. (REPI671C-S)

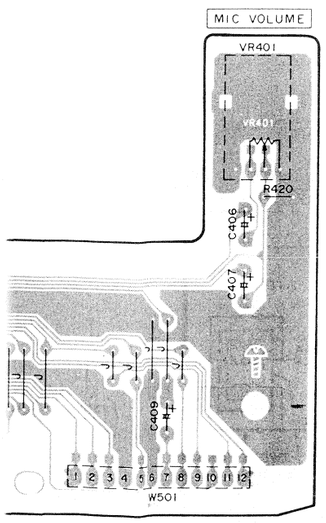


•Terminal guide of IC's, transistors and diodes

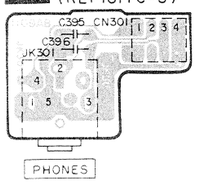
AN6558-FSG BA4558DX	M5218AP	LC65204A4B79	SVI3102D
2SA1309AIQTA 2SC3311ARSTA 2SC3311AIRTA 2SC3312RSTA 2SD1450STA UN4111TA UN4115TA UN4211TA		2SB1357DEFTA	2SC3940AQSTA
2SC3112TA 2SC3327ABTP KSD471ACYGTA		2SB1185EF 2SD1762EF	MA155TA
MA185TA 1SS291TA	MA4051MTA MA4062HTA MA4062MTA MA4068MTA MA4091MTA		P300I5002T 1SR3:200TB
	MA4150HTA MA4240MTA MA4270HTA	SLR-305VC	

6 7 8 9 10 11 12 13 14

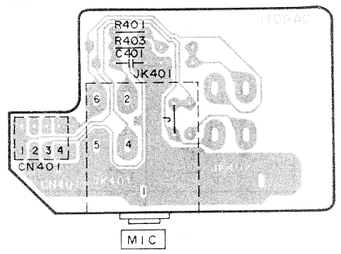




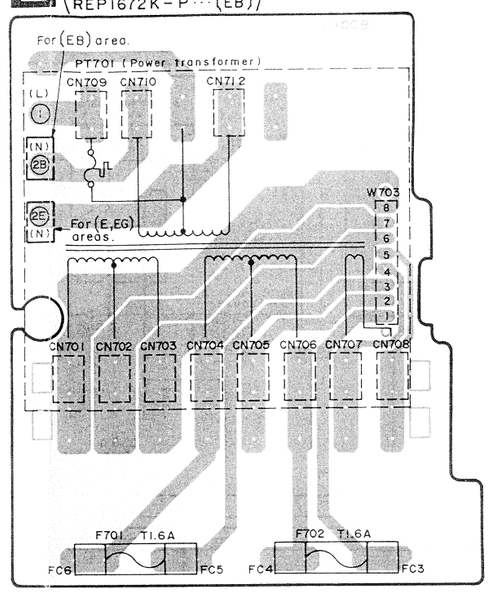
B HEADPHONES JACK P.C.B. (REP1671C-S)



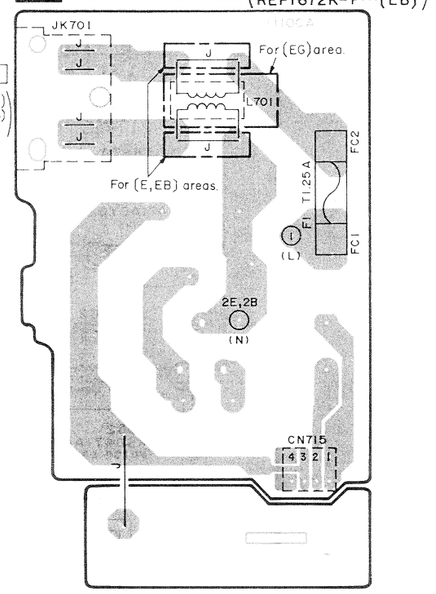
C MIC JACK P.C.B. (REP1671C-S)



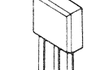
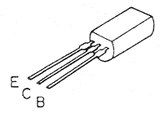
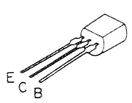
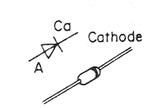
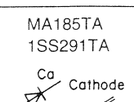
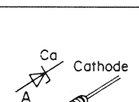
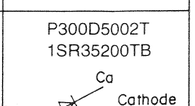
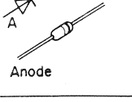
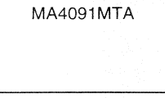
E POWER TRANSFORMER P.C.B. (REP1672F-P····(EG) REP1672G-P····(E) REP1672K-P····(EB))



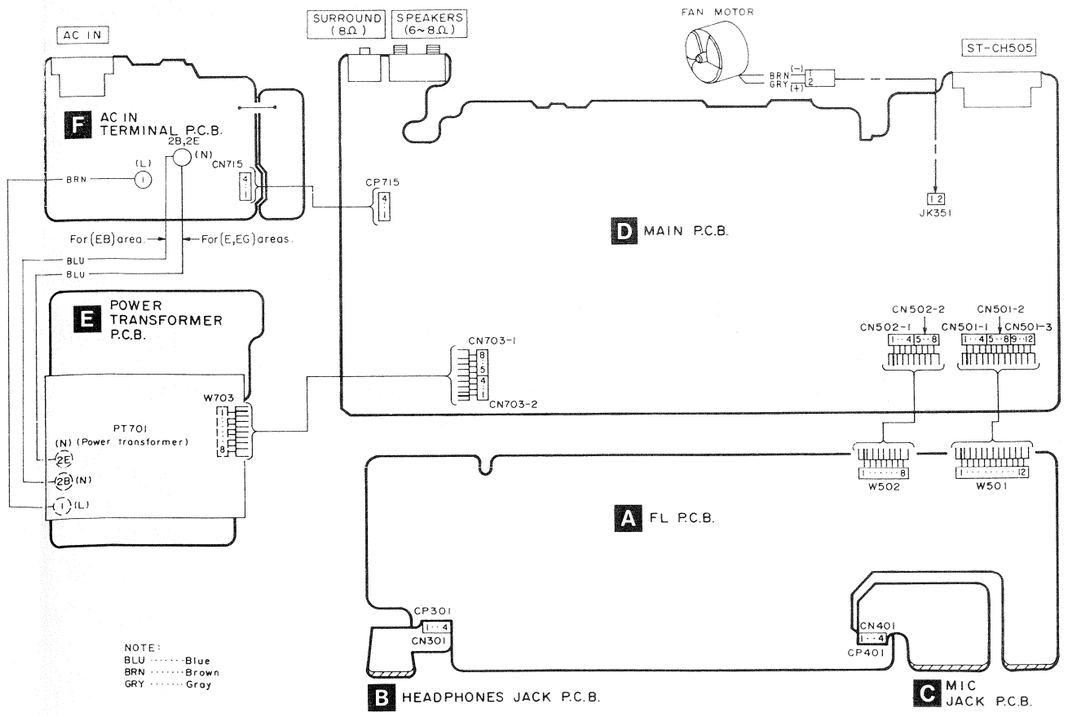
F AC IN TERMINAL P.C.B. (REP1672F-P····(EG) REP1672G-P····(E) REP1672K-P····(EB))



● **Terminal guide of IC's, transistors and diodes**

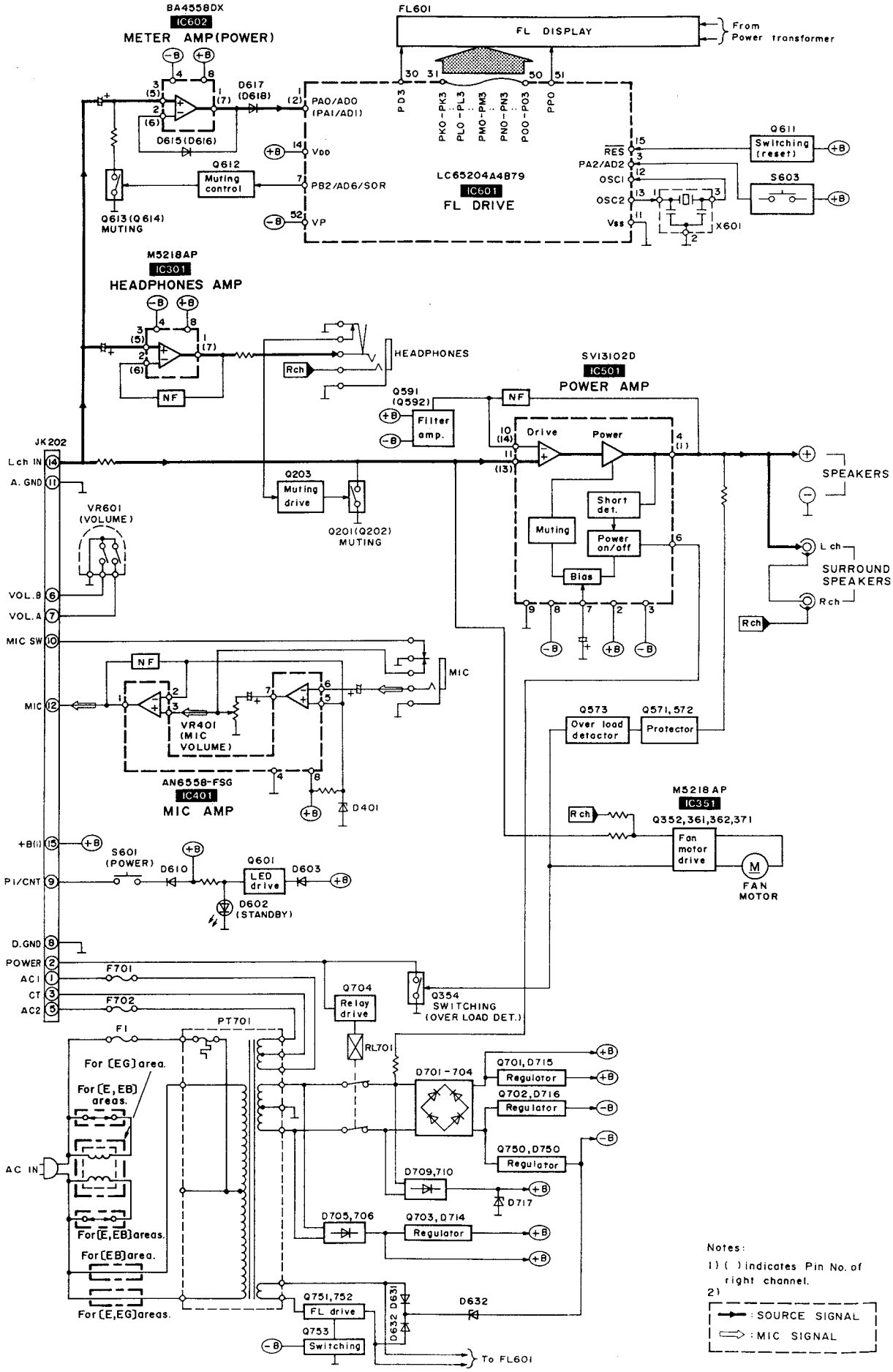
AN6558-FSG BA4558DX	M5218AP	LC65204A4B79	SVI3102D
			
	2SA1309AIQTA 2SC3311ARSTA 2SC3311AIRTA 2SC3312RSTA 2SD1450STA UN4111TA UN4115TA UN4211TA	2SB1357DEFTA 	2SC3940AQSTA 
	2SC3112TA 2SC3327ABTP KSD471ACYGTA	2SB1185EF 2SD1762EF 	MA165TA 
MA185TA 1SS291TA 		MA4051MTA MA4062HTA MA4062MTA MA4068MTA MA4091MTA	P300D5002T 1SR35200TB 
	MA4150HTA MA4240MTA MA4270HTA	SLR-305VC 	

■ Wiring Connection Diagram



NOTE:
BLU ·····Blue
BRN ·····Brown
GRY ·····Gray

■ Block Diagram



■ Function of IC Terminals

•IC601 (LC65204A4B79)

Pin No.	Terminal Name	I/O	Function
1	PA0/AD0	I	L-ch level signal input from IC602
2	PA1/AD1	I	R-ch level signal input from IC602
3	PA2/AD2	I	Operation key ON/OFF signal input
4	PA3/AD3	I	Check mode input (Mode ON: "H")
5	PB0/AD4	—	Connected to GND
6	PB1/AD5		
7	PB2/AD6	O	Meter range switching signal input (×1 mode: "H", X0.1 mode: "L")
8	PB3/AD7	I	Power ON detection signal input
9	AV+	I	A/D converter standard voltage input
10	AV−	—	
11	V_{SS}	—	Connected to GND
12	OSC1	I/O	Clock signal input/output (Connected to X601)
13	OSC2		
14	V_{DD}	I	Power supply terminal (+5 V input)
15	$\overline{RES}$	I	Reset signal input (Operation mode: "H", Reset mode: "L")
16	×1	I	Connected to V_{DD}
17	×2	—	——
18	TEST	—	Connected to GND
19 ~ 21	PF0/S1 ~ PF2/SCK	—	FL segment drive output (Connected to GND) (Pulse signal output)
22	PF3/INT0	I	Power OFF detection signal input
23 ~ 29	PC0 ~ PD9	—	——
30 ~ 45	PD3 ~ PN2	O	FL segment drive output (Pulse signal output)
46 ~ 51	PN3 ~ PP0	O	FL grid drive output (Pulse signal output)
52	VP	—	FL pull-down power source input

■ Replacement Parts List

Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.
*Remote Control Ass'y: Supply period for three years from termination of production.
*The "(SF)" mark denotes the standard part.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC301	M5218AP	I. C, HEADPHONES AMP.	
IC351	M5218AP	I. C, SIGNAL LEVEL DET.	
IC401	AN6558-FSG	I. C, MIC AMP.	
IC501	SVI3102D	I. C, POWER AMP.	⚠
IC601	LC65204A4B79	I. C, FL DRIVE	
IC602	BA4558DX	I. C, METER AMP.	
		TRANSISTOR(S)	
Q201, 202	2SD1450RTA	TRANSISTOR	
Q203	UN4115	TRANSISTOR	
Q352	KSD471ACYGTA	TRANSISTOR	⚠
Q354	2SC3311AIRTA	TRANSISTOR	
Q361	KSD471ACYGTA	TRANSISTOR	⚠
Q362	2SC3327-A	TRANSISTOR	⚠
Q371	2SC3311ARSTA	TRANSISTOR	
Q571, 572	2SC3311AIRTA	TRANSISTOR	
Q573	2SA1309AIQTA	TRANSISTOR	
Q591, 592	2SC3312RSTA	TRANSISTOR	
Q601	UN4211	TRANSISTOR	
Q611	UN4211	TRANSISTOR	
Q612	UN4111	TRANSISTOR	
Q613, 614	2SD1450RTA	TRANSISTOR	
Q701	2SD1762EF	TRANSISTOR	⚠
Q702	2SB1185EF	TRANSISTOR	⚠
Q703	2SC3940AQSTA	TRANSISTOR	⚠
Q704	2SC3112TA	TRANSISTOR	
Q750	2SB1357DEFTA	TRANSISTOR	⚠
Q751, 752	2SD1450RTA	TRANSISTOR	
Q753	UN4111	TRANSISTOR	
		DIODE(S)	
D351	MA165	DIODE	
D352	MA4068M	DIODE	⚠
D361	MA4091-M	DIODE	⚠
D362	MA165	DIODE	
D371	MA165	DIODE	
D401	MA4062MTA	DIODE	
D602	SLR-305VC	LED	
D603	MA165	DIODE	
D610	MA165	DIODE	
D611	1SS291TA	DIODE	

Ref. No.	Part No.	Part Name & Description	Remarks
D612, 613	MA165	DIODE	
D614	1SS291TA	DIODE	
D615-618	MA165	DIODE	
D619, 620	MA4062MTA	DIODE	⚠
D631, 632	MA165	DIODE	
D701-704	P300D5002T	DIODE	⚠
D705, 706	1SR35200TB	DIODE	⚠
D709, 710	MA185TA	DIODE	⚠
D711	MA165	DIODE	
D712	MA4240H	DIODE	
D714	MA4062-H	DIODE	⚠
D715, 716	MA4150M	DIODE	⚠
D717	MA4051MTA	DIODE	⚠
D750	MA4270HTA	DIODE	⚠
		VARIABLE RESISTOR(S)	
VR401	EVJ02BF02B14	V. R, MIC VOLUME CONTROL	
VR601	EVQWQAF2524B	V. R, MAIN VOLUME CONTROL	
		COIL(S)	
L501, 502	SLQY07G-40	COIL	
L601	ELEXT100KA9	COIL	
L701	RLQZ271M	COIL	⚠(EG)
		OSCILLATOR(S)	
X601	EFOEC4004T4	OSCILLATOR(4MHz)	
		DISPLAY	
FL601	RSL0162-F	FL DISPLAY	
		FUSE(S)	
F1	XBA2C12TBOS	FUSE, 250V T1. 25A	⚠
F701, 702	XBA2C16TBO	FUSE, 250V T1. 6A	⚠
		SWITCH(ES)	
S601	EVQ21405R	SW, POWER	
S603	EVQ21405R	SW, RANGE	
		CONNECTOR(S)	

Notes : * Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Part Name & Description	Remarks
CN301	RJU057W004	SOCKET(4P)	
CN401	RJU057W004	SOCKET(4P)	
CN701-710	RJS1A1101T1	SOCKET(1P)	
CN712	RJS1A1101T1	SOCKET(1P)	
CN715	RJU057W004	SOCKET(4P)	
CN501-1-3	RJS1A6604	SOCKET(4P)	
CN502-1, 2	RJS1A6604	SOCKET(4P)	
CN703-1, 2	RJS1A6604	SOCKET(4P)	
CP301	RJT057W004-1	CONNECTOR(4P)	
CP401	RJT057W004-1	CONNECTOR(4P)	
CP715	RJT057W004-1	CONNECTOR(4P)	
		EARTH TERMINAL(S)	
E501	SNE1004-1	GND PLATE	
E701	SNE1004-1	GND PLATE	
		FUSE HOLDER(S)	
FC1-6	EYF52BC	FUSE HOLDER	
		TRANSFORMER	
PT701	RTP2M5B003	POWER TRANSFORMER	⚠
		RELAY	
RL701	RSY0013M-0	RELAY	⚠
		JACK(S)	
JK202	RJT065W15	CONNECTOR(15P)	
JK301	RJJ37TN01-C	HEADPHONES JACK	
JK351	SJT3213	CONNECTOR(2P)	
JK401	RJJ65MA01	MIC JACK	
JK501	RJR0054M	SPEAKER TERMINAL	
JK502	SJF3068-12N	SPEAKER TERMINAL(SURROUND)	
JK701	SJS9236	AC INLET	⚠

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R159	ERDS2TJ100	1/4W 10
R217, 218	ERDS2TJ102	1/4W 1K
R223, 224	ERDS2TJ122	1/4W 1.2K
R251	ERDS2TJ222	1/4W 2.2K
R253, 254	ERDS2EJ121	1/4W 120
R255	ERDS2TJ154	1/4W 150K
R256	ERDS2TJ105T	1/4W 1M
R259	ERDS2TJ561	1/4W 560
R291, 292	ERDS2TJ104	1/4W 100K
R301, 302	ERDS2TJ223	1/4W 22K
R303, 304	ERDS2TJ333	1/4W 33K
R305, 306	ERDS2TJ223	1/4W 22K
R307, 308	ERDS2TJ102	1/4W 1K
R309-312	ERDS2EJ121	1/4W 120
R351	ERDS2TJ563	1/4W 56K
R352	ERDS2TJ184T	1/4W 180K
R353	ERDS2TJ474	1/4W 470K
R354	ERDS2TJ102	1/4W 1K
R355	ERDS2TJ103	1/4W 10K
R356	ERDS2TJ332	1/4W 3.3K
R357	ERDS1FVJ100T	1/2W 10 ⚠
R358	ERDS1FVJ220T	1/2W 22 ⚠
R361	ERDS2TJ474	1/4W 470K
R362	ERDS2TJ102	1/4W 1K
R371, 372	ERDS2TJ273	1/4W 27K
R373	ERDS2TJ222	1/4W 2.2K
R374	ERDS2TJ273	1/4W 27K
R375	ERDS2TJ822	1/4W 8.2K
R398	ERDS2TJ332	1/4W 3.3K
R399	ERDS2TJ154	1/4W 150K
R401	ERDS2TJ221	1/4W 220
R403	ERDS2TJ473	1/4W 47K
R404	ERDS2TJ123	1/4W 12K
R405	ERDS2TJ474	1/4W 470K
R406	ERDS2TJ102	1/4W 1K
R407	ERDS2TJ104	1/4W 100K
R408	ERDS2TJ473	1/4W 47K
R409	ERDS2TJ332	1/4W 3.3K
R410	ERDS2TJ102	1/4W 1K
R411	ERDS2TJ562	1/4W 5.6K
R412	ERDS2TJ102	1/4W 1K
R420	ERDS2TJ104	1/4W 100K
R501, 502	ERDS2TJ102	1/4W 1K
R503-506	ERDS2TJ563	1/4W 56K
R507-510	ERDS2TJ102	1/4W 1K
R511	ERDS2TJ334	1/4W 330K

Ref. No.	Part No.	Values & Remarks
R512	ERDS2TJ154	1/4W 150K
R513	ERDS2TJ684	1/4W 680K
R514	ERD25FJ470	1/4W 47 ⚠
R515, 516	ERDS1FVJ100T	1/2W 10 ⚠
R517, 518	ERD25FVJ100T	1/4W 10 ⚠
R571	ERDS2TJ823T	1/4W 82K
R572	ERDS2TJ124T	1/4W 120K
R573	ERDS2TJ563	1/4W 56K
R574	ERDS2TJ564	1/4W 560K
R575	ERDS2TJ223	1/4W 22K
R591, 592	ERDS2TJ391	1/4W 390
R593, 594	ERDS2TJ182	1/4W 1.8K
R595, 596	ERDS2TJ473	1/4W 47K
R597, 598	ERDS2TJ123	1/4W 12K
R602	ERDS2TJ471	1/4W 470
R610	ERDS2TJ103	1/4W 10K
R611, 612	ERDS2TJ333	1/4W 33K
R613, 614	ERDS2TJ274	1/4W 270K
R615, 616	ERDS2TJ123	1/4W 12K
R617, 618	ERDS2TJ273	1/4W 27K
R619, 620	ERDS2TJ223	1/4W 22K
R621, 622	ERDS2TJ824	1/4W 820K
R623, 624	ERDS2TJ220T	1/4W 22
R625, 626	ERDS2TJ473	1/4W 47K
R627, 628	ERDS2TJ102	1/4W 1K
R629	ERDS2TJ472	1/4W 4.7K
R630	ERDS2TJ222	1/4W 2.2K
R631	ERDS2TJ105T	1/4W 1M
R632	ERDS2TJ334	1/4W 330K
R633, 634	ERDS2TJ102	1/4W 1K
R635, 636	ERDS2TJ752T	1/4W 7.5K
R637	ERDS2TJ104	1/4W 100K
R638	ERDS2TJ102	1/4W 1K
R639	ERDS2TJ223	1/4W 22K
R640	ERDS2TJ102	1/4W 1K
R641	ERDS2TJ822	1/4W 8.2K
R644-646	ERDS2TJ103	1/4W 10K
R652	ERDS2TJ102	1/4W 1K
R654, 655	ERDS2TJ222	1/4W 2.2K
R701	ERQ16NKW2R2E	1/4W 2.2 ⚠
R702	ERD2FCVJ4R7T	1/4W 4.7 ⚠
R703, 704	ERDS2TJ562	1/4W 5.6K
R705, 706	ERG1SJ471E	1W 470 ⚠
R707	ERDS1FVJ820T	1/2W 82 ⚠
R708	ERDS2TJ472	1/4W 4.7K
R709	ERG1SJ391E	1W 390 ⚠
R711	ERG1SJ331E	1W 330 ⚠
R713	ERDS2TJ6R8	1/4W 6.8
R714	ERDS2TJ153	1/4W 15K
R716	ERDS2TJ393	1/4W 39K
R717	ERDS2TJ473	1/4W 47K
R751	ERDS2TJ392T	1/4W 3.9K

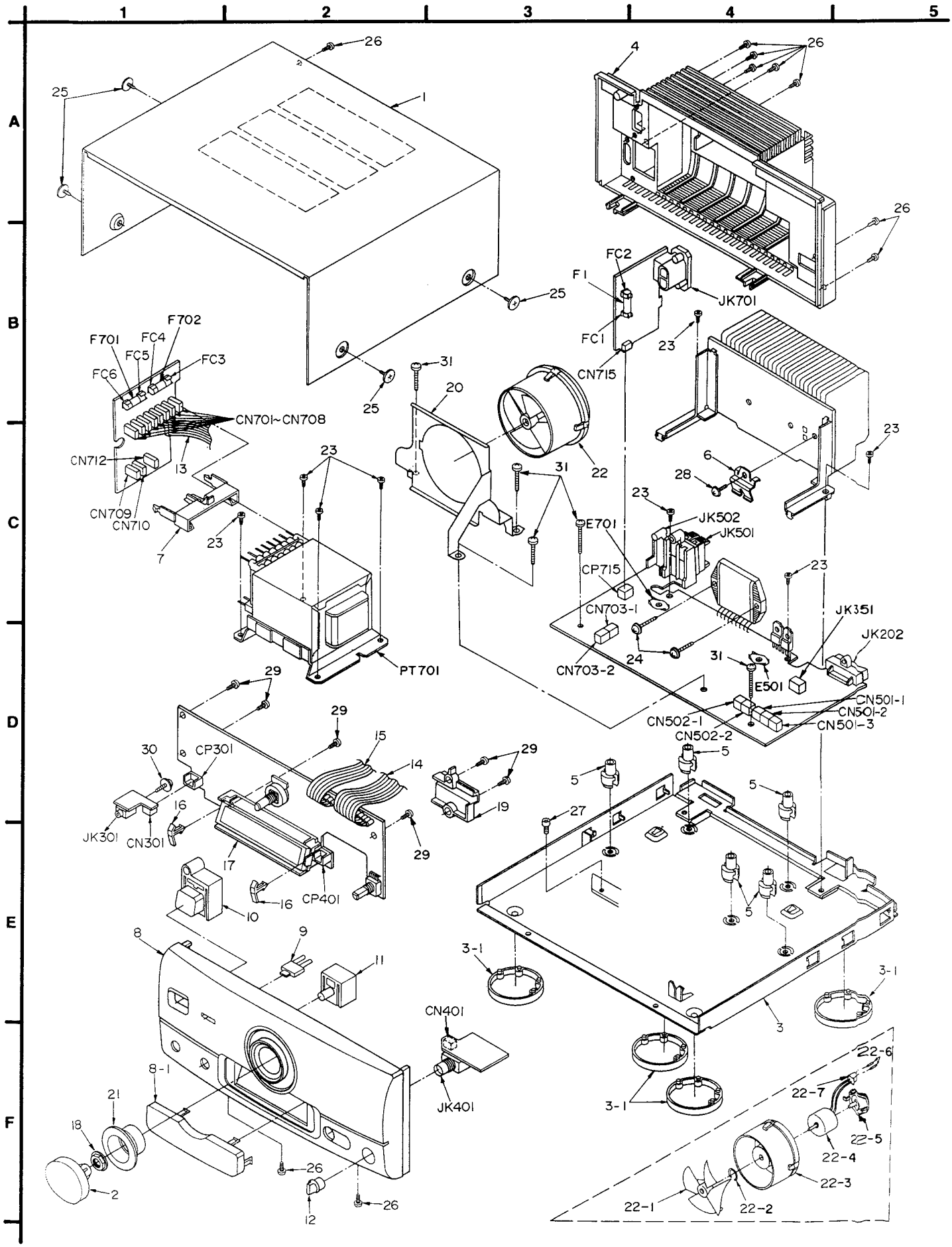
Ref. No.	Part No.	Values & Remarks
R752	ERDS2TJ332	1/4W 3.3K
R754	ERDS2TJ1R0	1/4W 1.0
R780	ERDS2TJ822	1/4W 8.2K
R799	ERDS2TJ103	1/4W 10K
		CAPACITORS
C251	ECEA0JKA221B	6.3V 220U
C301, 302	ECEA1HKA3R3B	50V 3.3U
C303, 304	ECBT1H150J5	50V 15P
C305, 306	ECBT1H330J5	50V 33P
C307, 308	ECEA1CKA220B	16V 22U
C351	ECEA1CKA100B	16V 10U
C352	ECBT1E223ZF	25V 0.022U
C353	ECEA1HKA2R2B	50V 2.2U
C361	ECEA1CN470SB	16V 47U
C362	ECEA1CKA100B	16V 10U
C371	ECEA0JKA221B	6.3V 220U
C381, 382	ECBT1E103ZF	25V 0.01U
C395, 396	ECBT1E223ZF	25V 0.022U
C397, 398	ECBT1E103ZF	25V 0.01U
C401	ECBT1H221KB5	50V 220P
C403	ECEA1HKA3R3B	50V 3.3U
C404	ECBT1H221KB5	50V 220P
C405	ECBT1H101KB5	50V 100P
C406	ECEA1CKA100B	16V 10U
C407	ECEA1HKA3R3B	50V 3.3U
C408	ECBT1H181KB5	50V 180P
C409	ECEA1HKA010B	50V 1U
C410	ECBT1H221KB5	50V 220P
C411	ECBT1E103ZF	25V 0.01U
C412	ECBT1E223ZF	25V 0.022U
C414	ECA1AM331B	10V 330U
C415	ECBT1H102KB5	50V 1000P
C421	ECBT1H102KB5	50V 1000P
C501, 502	ECA1HAP3R3B	50V 3.3U
C503, 504	ECBT1H331KB5	50V 330P
C505, 506	ECBT1H150J5	50V 15P
C507, 508	ECBT1C272KR5	16V 2700P
C509, 510	ECEA1HKA2R2B	50V 2.2U
C511, 512	ECBT1C122KR5	16V 1200P
C513	ECEA1VU470	35V 47U
C514	ECA2AAP100B	100V 10U
C515, 516	ECBT1H104ZF5	50V 0.1U
C557	ECA1VM101B	35V 100U
C562	ECEA1HKN010B	50V 1U
C571	ECEA0JKA101B	6.3V 100U
C572	ECBT1E223ZF	25V 0.022U
C591, 592	ECEA1HKA010B	50V 1U
C593, 594	ECQV1H104JM3	50V 0.1U
C601-606	ECEA1CKA100B	16V 10U
C607	ECEA0JU102	6.3V 1000U

Ref. No.	Part No.	Values & Remarks
C609	ECBT1E103ZF	25V 0.01U
C610, 611	ECEA1CKA100B	16V 10U
C612	ECEA1HKA3R3B	50V 3.3U
C613, 614	ECBT1E103ZF	25V 0.01U
C615, 616	ECEA1VKA330B	35V 33U
C617, 618	ECEA1CKA100B	16V 10U
C621, 622	ECBT1E223ZF	25V 0.022U
C632	ECEA1HKA010B	50V 1U
C641-645	ECBT1E103ZF	25V 0.01U
C671, 672	ECBT1C822KS5	16V 8200P
C701, 702	ECEA45V472YB	45V 4700U ⚠
C703, 704	ECEA1CKA330B	16V 33U
C705, 706	ECKR1H103ZF5	50V 0.01U
C707	ECA1HM221B	50V 220U ⚠
C708	ECEA1CKA100B	16V 10U
C709, 710	ECBT1E103ZF	25V 0.01U
C711	ECQE1104KF3	100V 0.1U
C712	ECBT1E223ZF	25V 0.022U
C714	ECKR1H103ZF5	50V 0.01U
C731, 732	ECKT1H102KB	50V 1000P
C751	ECEA1VKA100B	35V 10U
C752	ECKR1H103ZF5	50V 0.01U
C905, 906	ECBT1H101KB5	50V 100P
C1101, 1102	ECBT1E223ZF	25V 0.022U
C1103-1106	ECBT1H102KB5	50V 1000P

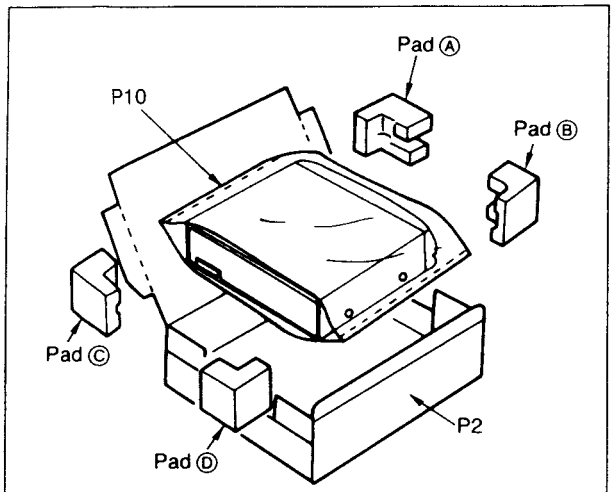
Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS LIST	
1	RKM0202B-1K	CABINET	
2	RGW0183-K	KNOB, MAIN VOLUME	
3	RFKJECH404EK	BOTTOM BOARD ASS'Y	
3-1	RKA0011-3	FOOT	
4	RFKHECH515AE	REAR GRILL ASS'Y	(E)
4	RFKHECH515EB	REAR GRILL ASS'Y	(EB)
4	RFKHECH515EG	REAR GRILL ASS'Y	(EG)
5	RKQ0089	P.C.B. SPACER	
6	RMC0158	TRANSISTOR HOLDER	
7	RMN0191	HOLDER	
8	RFKGECH515AE	FRONT PANEL ASS'Y	
8-1	RKW0302-V	FL PANEL	
9	RGL0220-Q	LEADING LIGHT PANEL	
10	RGU0939-K	BUTTON, POWER	
11	RGU0940-K	BUTTON, RANGE	
12	RGW0178-K	KNOB, MIC VOLUME	
13	REZ0606	FLAT CABLE(8P) (W703)	
14	RWJ1812220QC	FLAT CABLE(12P) (W501)	
15	RWJ1808220XX	FLAT CABLE(8P) (W502)	
16	RMN0195	FL SPACER	
17	RMN0237	FL HOLDER(SH601)	
18	SNE4021-1	NUT	
19	RMN0236	MIC JACK P.C.B. HOLDER	
20	RMN0215	FAN ANGLE	
21	RGK0593-S	ORNAMENT RING	
22	SYE1128-2	FAN ASS'Y	
22-1	SHE232	FAN	
22-2	SUS271	SPRING	
22-3	SHE233-1	FAN CASE	
22-4	MDN-4RB4MRC	MOTOR	
22-5	SHE234	CAP	
22-6	SJT783	TERMINAL	
22-7	SJS5215	CONNECTOR(2P)	
23	XTB3+8JFZ	SCREW	
24	XTW3+15T	SCREW	
25	RHD30007	SCREW	
26	XTBS3+8JFZ1	SCREW	
27	RHD30032	SCREW	
28	XTW3+8T	SCREW	
29	XTBS26+8J	SCREW	
30	XTWS3+10T	SCREW	
31	XTB3+20JFZ	SCREW	
		PACKING MATERIALS	
P1	RPG1865	PACKING CASE(SYSTEM)	(E) (EG)
P1	RPG1866	PACKING CASE(SYSTEM)	(EB)
P2	RPG1437	PACKING CASE(CD)	
P3	RPG1314	PACKING CASE(TUNER)	

Ref. No.	Part No.	Part Name & Description	Remarks
P4	RPG1312	PACKING CASE(AMPLIFIER)	
P5	RPG1313	PACKING CASE(DECK)	
P6	RPN0768	PAD(CD)	
P7	RPN0719	PAD(TUNER)	
P8	RPN0720	PAD(AMPLIFIER)	
P9	RPN0721	PAD(DECK)	
P10	XZB45X50A01Z	PROTECTION COVER	
P11	RPQF0047	ACCESSORIES BOX	
P12	XZB22X20C03	POLYETHYLENE COVER	
P13	XZB24X34C04	POLYETHYLENE COVER	
		ACCESSORIES	
A1	RAK-CH121WH	REMOTE CONTROL TRANSMITTER	
A1-1	RKK0057-K	BATTERY COVER	
A2	REE0393	SPEAKER CORD	
A3	REX0511	FLAT CABLE(15P) (LONG TYPE)	
A4	REX0512	FLAT CABLE(15P) (SHORT TYPE)	
A5	RJA0019-2K	AC POWER SUPPLY CORD	⚠(SF) (E) (EG)
A5	VJA0733	AC POWER SUPPLY CORD	⚠(SF) (EB)
A6	RFKSECH515AE	INSTRUCTIONS MANUAL	(E)
A6	RFKSECH515EB	INSTRUCTIONS MANUAL	(EB)
A6	RQT2202-E	INSTRUCTIONS MANUAL	(EG)
A7	RQA0013	WARRANTY CARD	
A8	RQCB0169	SERVICE CENTER LIST	
A9	RSA0007	FM INDOOR ANTENNA	
A10	RSA0010	AM LOOP ANTENNA	
A10-1	RMN0244	ANTENNA HOLDER	
A10-2	XTN3+10AFZ	SCREW	
A11	SJP9009	ATTACHMENT PLUG	⚠(EB)

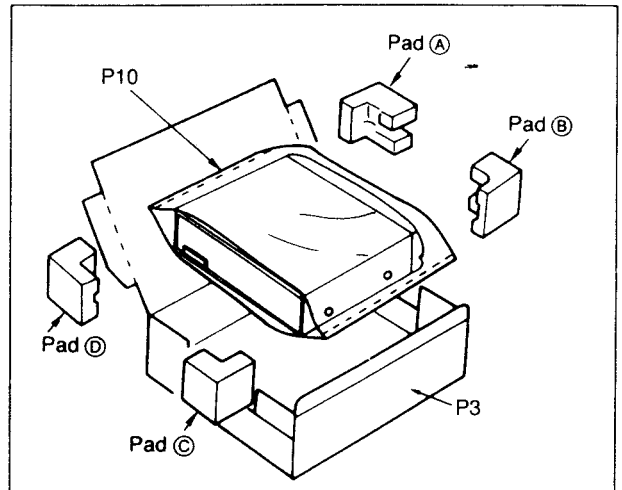
■ Cabinet Parts Location



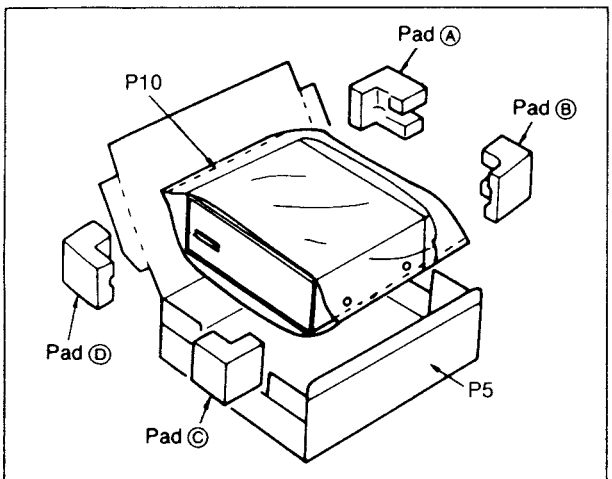
■ Packaging



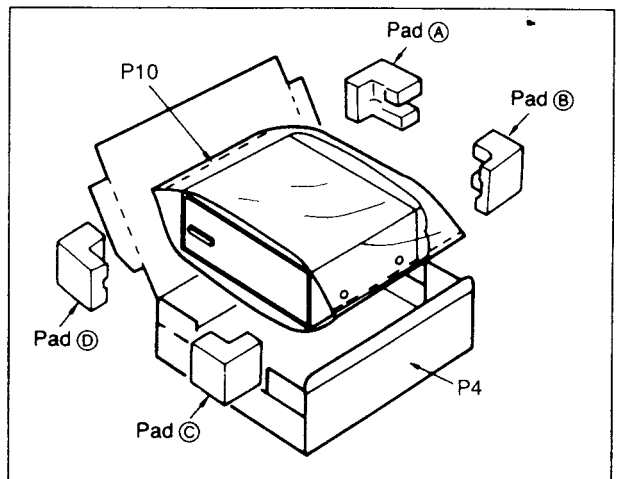
P6: Pad Ⓐ Ⓑ Ⓒ Ⓓ ass'y
(SL-CH515: Compact disc changer)



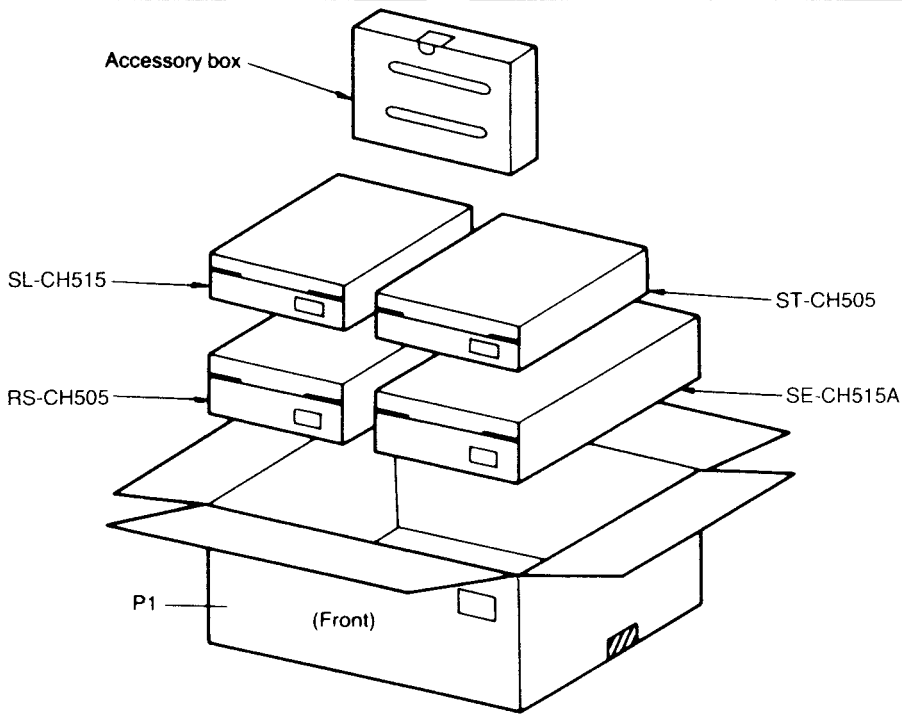
P7: Pad Ⓐ Ⓑ Ⓒ Ⓓ ass'y
(ST-CH505: Tuner/Sound processor)



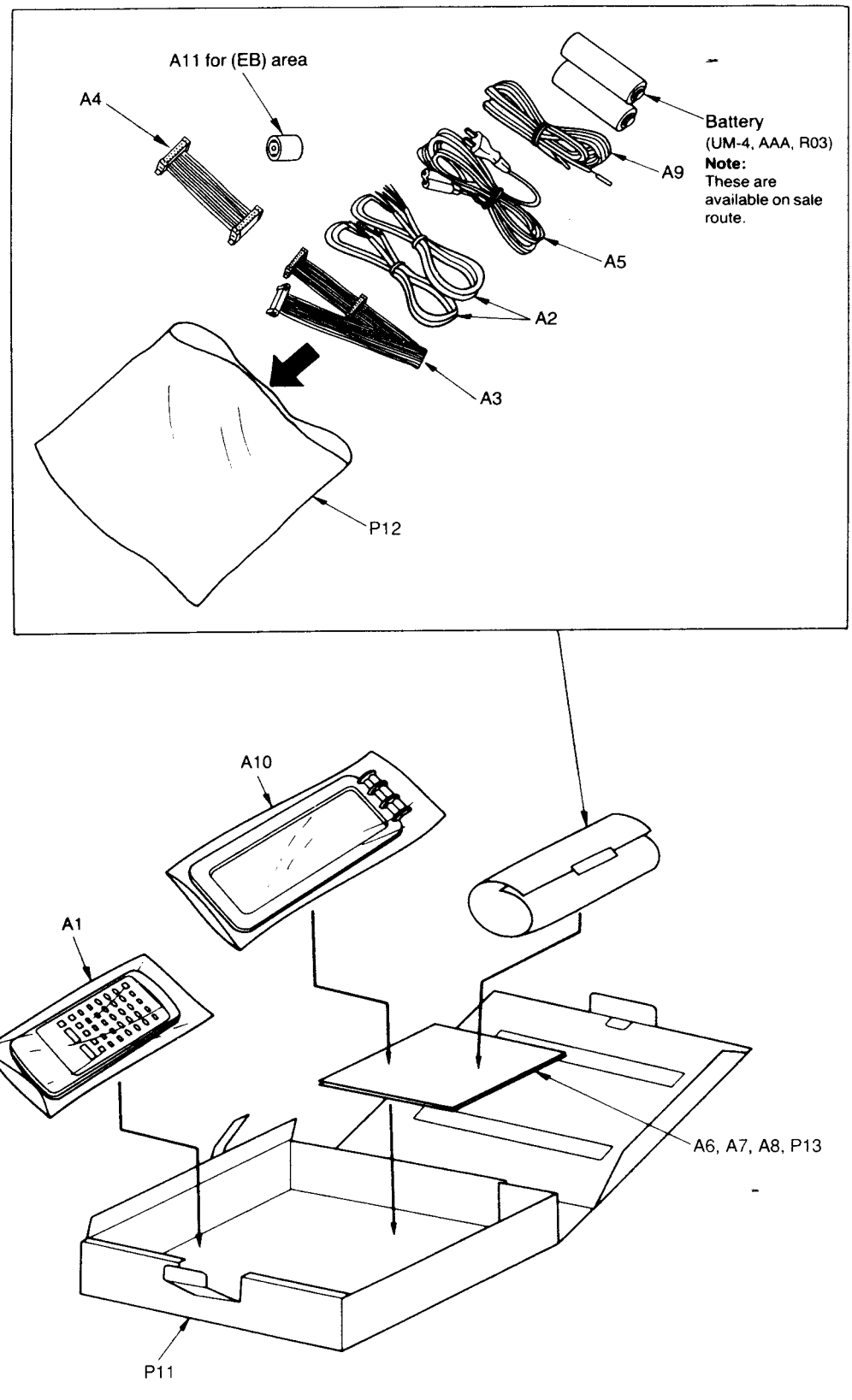
P9: Pad Ⓐ Ⓑ Ⓒ Ⓓ ass'y
(RS-CH505: Cassette deck)



P8: Pad Ⓐ Ⓑ Ⓒ Ⓓ ass'y
(SE-CH515A: Amplifier)



■ C



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